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Society of Bengal





JOURNAL
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ASIATIC SOCIETY OF BENGAL,

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PART I.—JANUARY TO JUNE, 1847.

"It will flourish, if naturalists, chemists, antiquaries, philologists, and men of science, in different parts of Asia will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish if such communications shall be long intermitted; and it will die away if they shall entirely cease."—SIR WM. JONES.

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E R R A T A.

PART 1ST.



<i>Page</i>	<i>Line</i>	
301	12	for Triunba read Trúmba.
„	19	for Sherí at el Beitha read Sherí 'at el Beitha.
302	4	for Tarimyer read Tarmíyeh.
„	12	for Jeddiah read Jedídah.
„	18	for Jeddiah read Jedídah.
303	10	for After “When it bore East” read On the right bank, &c.
„	17	for Khiyat read Khayt.
„	24	for Jeddiah read Jedídah.
„	3	for (in note,) Keif read Kúf.
„	6	for Nhar read Nahr.
304	8	for bending read trending.
„	18	for Dojin read Doj'm.
„	3	of note, Seghimeh read Seghirmeh.
„	4	for Sir read Sú, and for Tau read Táúk.
„	67	for Hamria read Hamrín.
„	11	for Hamrool read Hamrín.
„	13	for Physens read Physcus.
„	„	Last of note, Opio read Opis.
305	23	for Daláhee and Lagros read Daláhú and Zagros.
„	24	for Malwujep read Malwíyeh.
306	28	for approached read approach.
„	29	for was read is.
307	1	for Siel el Azeez read Sid 't Azeez.
308	3 & 5	for Maluryeh read Malwíyeh.
309	9	for passing read passes.
„	25	for Malwújeh read Malwíyeh.
313	19	for Hebla read Kebla.
315	3	for round read mound.
„	6	for Shiragoor read Shirazoor.
„	2	of note, “Ustrima” read “Ustrina.”
„	13	for Sammariah read Samarra.
„	18 & 22	for Dina read Dúra.
„	28	for Sammariah read Samarra.
316	19	for this read thus.
„	24	for present read personal.
317	9	for Yet alij read Tel alij.
„	10	for Apis read Opis.
„	22	for Mahrwan read Nahrwán.
„	24	of note, for it read is.
„	29	for Zellar read Tellúl.
„	37	for Malwryeh read Malwíyeh.
318	17	for had read hove.
319	16 & 17	for after the numerals ° and not t.
„	16	for Mahirgeh read Malwíyeh.

Page	Line	
319	21	for Abri Delif & Maluryeh read Abú Delif Malwíyeh.
„	24	for Majainmah read Majammah.
„	25	for On the east side, &c. read On the east side.
„	26	for Mahrwan read Nahrwán.
322	12	of note, for analysis read anabasis.
„	23	for M. Batta read M. Botta.
323	12	for Asperiall read Aspinal.
„	21	for “Durn” read “Dum.”
325	25	for Tekriths read Tekritlis.
326	11	for “Al’arab” read “Al’Arab.”
„	14	for Tekrith read Tekritlis.
„	24	for a Scorpii read a Scorpü.
„	13	for Khanisah read Kanisah.
327	2	for Arnin read a ruin.
„	3	for Kamsah read Kanisah.
„	4	for “El Tet’bha” read “El Fet’hha.”
„	6	for S. W. read N. W.
„	4	of note, for (Tageit) read (Tagrit).
328	1	for easting read casting.
„	13	for Khalidj—fresh sentence, Observing, &c.
„	24	for Extending to the Eastd. read Extending to the Eastd. from it ;
„	1	of note, for “E. Seliva” read “El Selwa.”
329	2	for Mejiris read Nejiris.
„	„	for Nejin read Nej’m.
„	6	for gazing read grazing.
„	8	for tints read tents.
330	6	for “El Tettha” read “El Fet’hha.”
„	9	for Makhal read Mak’húl.
331	31	for Maluryah read Malwiyeh.
„	34	for Tholush read Tho’liyah.
332	11	for Trumbee read Trúmba.
„	12	of note, for Al Athus read Al Athur.
„	14	for Bukhtyari read Bakhtiyári.

ADDITIONAL ERRATA IN PART 2D.

614	16	for POTAMIDA read POTAMIDÆ.
621	23	for <i>biporcatus</i> read <i>porosus</i> .
623	note,	for <i>Geckotidæ</i> read <i>Geckonidæ</i> .
643	3	for on the Pinang read in the Pinang.
656	5	for <i>Polycopodium</i> read <i>Polypodium</i> .
909	14	for 3 $\frac{3}{8}$ inch read 0 $\frac{3}{8}$ inch.
921	30	for HEXAHONOTUS read HEXAGONOTUS.
927	6	for <i>catenularies</i> read <i>catenularis</i> .
929	5	for Dryiphis read Dryiophis.
1066	11	for <i>twelceth</i> read <i>twelvth</i> .

JOURNAL

OF THE

ASIATIC SOCIETY.

MAY, 1847.

*An Account of the Temple of Triveni near Hugli, by D. MONEY, Esq.
Bengal Civil Service.*

As in architecture the superstructure depends upon the foundation, so in examination of ruins that time has made and spared, and in the attempt to elicit something of their earlier origin and history, how dependent are our conclusions upon the data that present themselves, and how difficult where these are slight and imperfect to form a satisfactory opinion!

The Temple of Triveni is shrouded in mystery, which legendary tale in the absence of historical fact cannot solve. Of its early date we know nothing. It is perhaps the most interesting ruin in Bengal, whether with reference to its present appearance or its past associations. About five miles from Hugli it stands on the most elevated spot in the neighbourhood, commanding a view of the river, which winds at a little distance beneath it. The temple originally must have occupied a large space and consisted of 3 or 4 Courts. On ascending two or three broken steps to the first Court you perceive on your right a part of the original temple, consisting of two rooms, of which there remain only the massy walls that enclose them and the doors by which you enter. You are struck at once with the solidity of the masonry, which but for Mahomedan aggression and Mahomedan sacrilege would have

defied till now the ravages of time. There is something Egyptian in the appearance of the doors, the sides inclining a little inwards towards the top, but this has been caused I think by a displacement of the stone-work. Each side is formed of one stone about 9 feet high, with a serpentine anaglyph running down the centre. From the first room a window looks out towards the river, on the outside of which there is a little ornamental engraving very light and chaste. A Mahomedan tomb desecrates one of the rooms, the inscription on which presents a passage in the history of the temple. Separated from the Court at a little distance is another Ruin of the original Temple of a different character. Here as in the other the hand of the invader and destroyer has been at work, and the demolition and displacement of the original masonry, the subsequent patchwork, and the superadded dome, are evidences of the ruthless and fanatical spirit, which marked in every clime and through every era, ere the power of the Crescent waned, its desolating course. The original Peelpye pillars in this temple are standing, and some of the stones in the outer walls have the appearance of an earlier date. On one of them is an inscription in Devanagree, which could not be decyphered. Mr. Marshman thinks this temple was built about 300 years ago by a Rajá of Orissá, Mukund Deb. It is with great diffidence I would venture to dissent from so good an authority, but there are facts which go far to show, as well as the appearance of the ruins, that its erection must have been at a much anterior date. I have alluded to an inscription upon a Mahomedan tomb. In this tomb was buried Zafir Khan, called by the Hindus Darap Khan, and the inscription which I annex with the translation, gives the date Hijeerah 713, or A. D. 1297.

بامر الخان الاجل الكريم المجد الجزيل العطاء الجميل الناصير الاسلام
 اظهر الانام شباب الحق والدين معين الملوك والسلاطين مرابي
 ارباب اليقين خان محمد ظفرخان اظفره الله على اعدائه وعطف
 اوليائه في غرة المحرم المضاف الى سنة ثلث عشر سبعمائة *

“ By the order of the titled, beneficent, most worthy, bestowing good rewards, the protector of the Mahomedan faith, the most famous among men,

a bright star of justice and religion, the defender of Kings and Princes, the protector of the faithful, Khan Mahamud Zafir Khan. God grant him victory against his enemies and bless his Race on the 1st Mohurum seven hundred and thirteen Hijerah."

The following is a translation of the Khurseenamah preserved by the Khadems attached to the tomb, two of whom are appointed as Mutawulees by the Court of the Sudder Nizamut Adawlut and hold Rent-free lands in Nuddea and Hugli. "Shah Zafir Khan Gauzee, accompanied by his nephew (sister's side) Shah Soofee, leaving his connections at Mundgaum, Pergunnah Konwar Portup, Chaklah Muksoosabad, came to Bengal for the purpose of converting infidels to the Mahomedan faith. Having made a proselyte of Raja Man Nriputi, he was killed in a battle fought with Raja Bhoodev at Hugli. His head was left on the field and his body was buried at Trivení. Ugwhan Khan, son of the aforesaid Shah Zafir Khan Ghazee, having marched against the Raja of Hugli in Sircar Satgram, conquered him, converted the infidels to Mahomedanism, and married his daughter. After some time Ugwhan Khan also died at Trivení. The descendants of the Khanzadeh are still in existence. The title of Khan was conferred by Feroze Shah." At Pundooa there is a mosque or monument of Shah Soofee, who was nephew of Feroze Shah of Delhi, and the Aymadars claim the Rent-free Kúsbah as descendants. They hold a document from which it appears that their title has existed for 500 years. This corresponds with the date of the inscription on Zafir Khan's tomb and is good evidence that Zafir Khan and Shah Soofee were contemporaries. History is silent as to the professed object of the visit of these two connections of the royal family of Delhi to this part of Bengal, and the chasm is not supplied by the following legend. A Mahomedan subject of a Hindu Raja on a certain festival in honor of his son used cow's flesh. The Raja slew the son. The father resorted to the Court of Delhi and told his tale to Feroze Shah, who immediately sent an army to Bengal against the Raja, commanded by Zafir Khan and his nephew Shah Soofee. The Raja's name was Bhoodev Nriputi, with whom a battle was fought at a place called Mahanud near Satgram, about 8 miles west of Trivení, where Zafir Khan's army was victorious. There is another curious legend connected with Zafir Khan. He was in spite of his hostility to the Hindoos and the destruction of their Raj

looked upon as a Boozoorg, or a man of divine inspiration, and is said to have worshipped Gunga. She smiled on the apostate devotee, and on one occasion so wrapt was he in devotion, that she rose from her liquid bed like

“ Another Venus breathing fresh and fair
A goddess sparkling in her wavy dress,”

and overpowered him by fascination of her charms. Such was the effect of her influence over his spirit that he forgot the Koran for the Shás-
ters, and in the ecstasy of the beatific vision the full tide of his aspirations rolled in Sanserit shlokes instead of Persian verse. This is a remarkable but melancholy instance of the weakness of faith against the potency of love. The champion of a fanatical creed, with sword in hand, is caught like the God of war in the net work of beauty. The Sanserit shlokes he composed are remembered and repeated to this day. They are called the shlokes of Durap Khan, and there is scarcely a clever pundit in India who does not know them. The following is selected as a specimen,

सुरधुनि मुनिकन्ये तारयेः पुण्यवन्तं स तरति निजपुण्यै स्तत्र
क्रिन्ते महत्त्वं । यदि च गतिविहीनं तारयेः पापिनं मां तदपि तव
महत्त्वं तन्महत्त्वं महत्त्वं ॥

“ Oh! Suradhuni Gunga, the daughter of Janhoo Muni, what will be thy greatness if thou wilt bestow salvation on the virtuous, who are saved by their own merits!—If thou bestowest salvation on me, who am a helpless wretch, I would then proclaim thy glory to the highest extremity.”

This religious metamorphoses in Zafir Khan must have had an effect on his son Ugwhan Khan, for he married the Raja of Hugli's daughter. She was buried within the precincts of the temple, where her tomb is still standing. It has crumbled to the ground, and there is no inscription to point it out. But a curious custom marks the spot. Hindoo votive offerings are presented there on Mahomedan festivals.

The date of the Arabic inscription on Zafir Khan's tomb, the Khurseenamah of the Khadeims, and the statement of the Aymadars of Shah Soofee's tomb at Pundooa, correspond nearly with the following

account given by Ferishteh of Feroze Toghluk of Dehli (vide Brigg's translation of Ferishteh, page 334, vol. IV.).

“On the death of Shamsooddeen, the nobles of the state elevated his eldest son to the throne three days afterwards. He had not long entered on his rule before his country was again invaded in the year A. H. 760, or A. D. 1358, by Feroze Toghluk of Dehli.” The next passage is a curious coincidence. “When the Dehli army arrived at *Pandwah*, Sikunder Poorby, following his father's example, took refuge in the fortress of Yekdullah, &c.” This Feroze Shah must have been one of the Afghan Sultans of Hindoostan of 3d Turk Dynasty, who ascended the throne of Dehli about 1351 A. D. Zafir Khan may have been brother-in-law to Feroze Shah. He was uncle by the mother's side of Shah Soofee, and Shah Soofee was nephew of Feroze Shah. Could he also have been the father of Ababek Shah, who mounted the throne of Dehli in 1389? His father's name was Zafir Khan. The next question is who was Raja Man Nriputi converted to the Musalman faith by Zafir Khan? Was he one of the Rajas of Orissa, the limits of which territory extended till two centuries after as far north as Trivení. Mr. Marshman in his history of Bengal states as follows:—

“The powerful kings of Orissa had previously extended their conquest in Bengal; and hence the Oriyahs boast that their kingdom once extended to Trivení on the Bhageerutee. In the year 1550 Telenga Mookund Deb ascended the throne of Orissa. He was the last independent king of that country; he founded a ghat and temple at the sacred spot of Trivení which formed the northern boundary of his dominions.” Compare Asiatic Researches, page 164, Vol. XV. “During the sway of the princes of the Gungabun's line, for a period of nearly four centuries, the boundaries of the Raja of Orissa may be stated as follows; with sufficient accuracy for a good description. North, a line drawn from Trivení Ghat above Hugli, through Bisherpore to the frontier of Putkun, east, the river Hugli and the sea south, the Godaveri or Gunga Godaveri, and west, a line carried from Singbhoom to Sonepur.”

If Raja Man Nriputi was not one of the Rajas of Orissa, it is probable that both he and Raja Bhoo Dev may have been zemindars connected with the royal family of Orissa, as they appear to have been chiefs of some consequence, or else tributary to that power. Their

names are not among the Hindoo kings of either the Sen or Pal dynasty.

Within the first part of the temple on some of the stones are the following inscriptions in the Nagree character.

श्रीसीता निधसः श्रीरामाङ्घ्रिके Sri Sitá Nidhúsah, Sri Rámábhisheka.	} The residence of Sitá. The coronation of Ráma.
पङ्क्तिषेक Bhisheka.	} Coronation. This seems to be part of another inscription (incomplete).
श्रीरामेण रावण बध्याः Sri Rámena Rávana Badha.	} Rávána killed by Ráma.
सीता विवाहः Sitá Bivaha.	} The marriage of Sitá.
कंसबधः Kangsa Badha.	} The destruction of Kangsa.
चानूरबधः Chánura Badha.	} The destruction of Chánura.
श्रीकृष्णबाणसुरयोद्धः Sri Krishna Vána Surayor Yuddha.	} The war between Krishnú and Ván Rájá.
वृद्धयुग्मदुःशसनायायदुग्म Vridhudyumna dyah Shasánaydya dwamna.	} These are names of the consorts of Krishna's grandson Pradyumna.

There are also near the northern and eastern entrances images of some of the Hindoo gods, such as Narasingha, Varáha, Ráma, Krishna, Lueshmi, &c. &c., most of them much defaced. The stones with the inscriptions were probably placed below some of these deities or others that have been destroyed, and as these deities are peculiar to the worship of Vishnu, it is most likely that the temple was consecrated to that deity. The stones containing the inscriptions are evidently out of their places. There is no regularity in their location, and one or two of them have the wrong side uppermost. From these appearances as well as others already mentioned, it is clear that the building is not now in its original state, and that formerly it must have been one Hindoo temple. The literal signification of Triveni is "three streams," in allusion to the river Gungá, Jumna, and Saruswati held sacred by the Hindoos. The spots where these rivers meet and where they separate are considered holy, and on this account the Shastras enjoin that expiatory ablutions should be particularly performed at these places.

According to Hindoo tradition there are two Trivenís, one at Prayag

or Allahabad, called *Joocta Veni*, on account of the junction of these streams, and the other *Moocla Veni* near Hugli, on account of their separation.

At the latter place the Jumna separates and takes its course eastward near *Gustia's Khal* or Bagur Khal, about a mile from Trivení, round the villages Jaguli, Beeroie, &c. and uniting afterwards with the rivers Chota Durga and Bura Durga in the Sundarbuns, ultimately joins the bay of Bengal. The Saruswati takes its course on the western bank to the Ganges round the villages Trivení, Supta-grama or Satgaun, Hossenbazar, &c. &c. and branching out from the creek at Sankhral near Budge Budge, joins the river Hugli and flows into the bay of Bengal.

Alluvian accretions have nearly choked up the bed and diverted the course of the Jumna, and it is now almost dry and not navigable by boats. But it is a fact, which has been I believe clearly ascertained, that in former times the main branch of this river flowed under the walls of Satgaun by Amtah and Tumlook into the Ocean, and that ships of large size came up to Satgaun, which was then famous for its commerce. The Saruswati is only navigable in the rains. The various wild mythological Hindoo traditions of the sources of these sacred streams must have given additional sanctity to Trivení.

The following shloke from the Muha Bharata, points out the locality of this sacred spot :—

प्रद्युम्न नगराक्षये सरस्वत्यास्तयोत्तरे । तद्वक्षिण प्रयागस्तु गङ्गातो
यमुनागता ॥ स्नात्वा तत्राक्षयं पुण्यं प्रयागश्च लक्ष्यते ॥

“On the south of Pradyumna Nagara, north of the river Saruswati, is the Dukshin Prayága, or south Prayága, where the river Jumna separates from the Gunga. This place is equal (*in point of holiness*) to north Prayága (Allahabad), and imperishable virtue may be attained by means of bathing here.”

The celebrated Raghununduna, the compiler of Smriti Shastras or Hindoo Laws, whose doctrines or religious rites are strictly observed by almost all the natives of Bengal, refers to the spot in the Práyaschittya Tutwa, or book treating on the expiation of sins.

दक्षिण प्रयाग उन्मुक्त वेणी सप्तग्रामाख्य दक्षिणदेशे ।

“The south Prayág called the *Moocla-Veni*, is situated in the southern part (*of Bengal*) near Supta-gráma.”

Satgaun or Supta-grama, must also have contributed to the sanctity of Trivení. It was not only famous for its commerce in the palmy days of Rome, but it was here the seven wise men of the east, the Supta Rishis or Munis, renowned for their piety as well as their wisdom, resided, and in the plantain groves, or on the banks of the sacred stream, worshipped the river goddess. The Hindoos believe that they came with Gunga from Hardwar to establish her worship at this place. Their names were Marichi, Angira, Atre, Pulastya, Pulata, Crutu, and Vashishtá. Supta-grama was so called from the seven sages having resided there. Their worship of Gunga is referred to in the following extract from the Maha Bhágbut Pooran.

तत्र सप्तर्षयो वीक्ष्य गङ्गां देवसुदुर्लभां । अभ्यर्च्य वीक्ष्य सानन्दां
शंखशब्देन नारदा इत्यादि ।

“Oh! Nárada, the seven Rishis after seeing Gungá, who was nearly to be seen even by the *Devatás* worshipped her, and she was pleased on hearing the sound of the shell, &c.”

Mention is made of Supta-grama or Satgaun in Rennell's memoirs, as well as Hamilton's Hindoostan, and Mr. Marshman in his history of Bengal, page 2, gives the following account :—

“The chief city of the west of Bengal was Satgaun, not very far north of Hugli. It was known to the Romans. It is also mentioned in the Poorans as Supta-grama, or the seven villages. It was the great mart of Bengal to which nearly all the sea-borne trade was brought.” A tradition is still current amongst the inhabitants of Trivení that many temples stood once on the banks of the three sacred streams, and they attribute to the seven Rishis the honor of their erection. It is most probable that the banks of these sacred streams in those early times were studded with temples. Every neighbouring spot has its legend still and retains its sanctity, and if such buildings are the signs of a successful faith, whatever that faith may be, can we wonder, where no clearer light had yet shone, that such signs were numerous, and that Idolatry, springing with the mythological river at its mountain source, should swell with the stream, and pour its full tide along unchecked, deluging the country on either side as it passed to its Ocean boundaries.

Such temples, if they remained unscattered in the time of Zafir Khan Ghazee, could scarcely escape the fury of the terrific Kalapahar.

He lived about the reign of the Orissa Raja Telenga Mookund Deb, A. D. 1550. He was by birth a bráhmaṇ, but by conversion a Muham-madan, and such was the terror he inspired, that it is commonly reported and believed, that the arms and legs of the idols for many a kros round dropped off at the sound of his kettle drum.

The present ghaut is of modern date, but the former possibly may have been coeval with the temple. Stones of large size are imbedded in the river, between the ghaut and the temple, which probably are the ruins of the ancient ghaut. Triveuí is still held in high estimation by the inhabitants of Orissa. The fame of its sanctity is far spread. Once a year there is a grand mela, and thousands flock to the ghaut for the purpose of bathing in the river. The sight is well worth the seeing. It is a fine picture for a clever artist. There is something highly picturesque in the attitudes, the grouping and the dresses. There is too a lesson to be learned from the deep fervor, however mistaken, and the burning zeal, however blinded, of the anxious worshippers. A lesson which Christiaus may learn and not be ashamed, and yet a painful impression is forced upon a thinking mind, that while light and knowledge are spreading rapidly, and so many nations enjoying the blessings they coufer, here in ancient India, near the very seat of a Christian Government, superstition so dark and strong should hold its sway, and delude, alas how fatally its thousands and thousands of votaries.

This is but a skeleton account of Trivení, which others may be able to fill up. These are but broken links of a chain it is difficult to connect. Others in possession of better data, and with a better knowledge of Indian history, may be able perhaps to form a connection.



Notes on the Caves of Burabur, by Capt. KITTOE, 6th N. I.

I now proceed to redeem my pledge of publishing the result of my enquiries concerning the caves of Burabur in Bahar.

Differing from all other works of the kind known to us, these caves or chambers are, with one exception, entirely devoid of sculpture or ornament of any kind. They are in all seven in number ; four in one

hill, three in another, but the name "Satgurba," commonly understood to mean "seven chambers," is applied to two only, which subject I shall treat of further on.

I shall first of all state that the hills called Burabur, are isolated rocks of sienitic granite rising abruptly from the plain about 15 miles north of the city of Gyah, by the left bank of the Phulgo or Mahanudda; the cluster is remarkable for its picturesque appearance, and for the noble masses of rock piled, as it were, one above another, with hardly any soil, consequently little vegetation, and rising to various heights, from 100 to 3 or 400 feet.

Although Burabur is that by which the cluster is commonly known, each hill has a name of its own. The highest being called "Burabur," also "Sidheswur," from a temple to Mahadeva that once crowned the highest, and of which I shall speak presently.

The next in height is the "Kowa Dol," which is detached from the rest by near a mile to the south-west.

A third is called "Nag-arjuni," and is the eastern-most of the great cluster.

A fourth, and the smallest, called Durhawut, is at the northern extremity; others have names also, but as the above alone contain objects of notice I shall rest content with giving them only.

The Kowa Dol being first met with, on coming from the Dak bungalow of Belah on the Patna road, from which it is distant full six miles, I shall take it first. It is an almost entirely bare rock, having nearly a perpendicular scarp on its northern face, and sloping at an angle of 45° , more or less, on the opposite or southern side: east and west, it is disjointed and inaccessible; huge stratified masses are piled one over the other, decreasing in length at each end, the whole is surmounted by single blocks like pillars; the centre one of which towers above the rest and is conical. It is said that formerly there was a huge block balanced on the top of this cone, which from its being moved by birds alighting on it obtained the name of "Kowa Dol" or crow-moved, or the crow-swing; about a century or less back, this rocking-stone fell down, where it may still be seen.

This hill seems to have been surrounded by a large town; there is an artificial mound continuous round the north and east faces, filled with broken pottery, bricks and blocks of hewn stone; there are two names

given, "Sarain" and "Summunpoor; on the portion called by the latter name there is an extensive Muhammadan cemetery; there are none but paltry monuments with fragments of some ancient Buddhist temple built into them.

In the hollow or recess on the east side are the remains of a once splendid Buddhist temple, of which many pillars are still standing, also a gigantic idol of Budha, seated, with no other inscription than the usual pious sentence of the Buddhists. The dimensions of this figure, which is beautifully executed, are as follow:—

	<i>Ft. in.</i>	
From seat to crown of the head.....	8	0
Across the shoulders	4	0
From knee to knee	6	0
Round the wrist.....	5	6
Do. the neck	3	8
Do. head	5	8
Across the forehead	1	4
Length of thigh	3	6
Do. of shin	3	6
Do. of upper arm	2	6
Do. lower Do.	2	0
Round the arm	2	8
Do. the wrist	1	6
Depth of head....	2-6	Length of hand 1-4 breadth of Do. 8-0
Do. of face	1-6	Do. of foot.... 1-6 breadth of Do. 8½

These measurements will convey some idea of the proportions of this fine piece of sculpture.

The Sinhasan or throne, is very handsome; there are the usual supporters, the Sinhas or lions rampant, trampling on elephants couchant, and ridden by amazons armed with shields and swords. The stone is the grey chlorite or pot stone; of such almost all the idols in this district as well as of Orissa are made; from the style of the carving, and the alphabet of the inscription I can assign no very remote date to these works; not more than 8 or 900 years, if so much.

Leaving this Buddhist relic we find some 60 or 80 figures of bráhmínical idols rudely cut in the huge detached masses of rock at the foot of the hill. Of these Durga slaying "Mahésh-Asúr," is the principal,

and most often repeated ; the next is the Lingam, and again the Gouri Sunkur, or Mahadeva, caressing Parbutti, who is seated on his knee, with the bull, "Nandi" at his feet, and the "Sinha" or lion at her's. There is one block hewn into the shape of a small temple, with niches and images on the four sides.* It has formed part of a small Dehgope to the memory of some departed devotee of heretical sect, the great Budha temple is likewise a funeral monument, as I shall, I hope, establish hereafter in a treatise on the subject of the Dehgopes or Chaityas for which I have collected much matter.

The sculptures on the detached blocks are in a very rude style, but this may be attributable in some measure to the extreme coarseness, and hardness of the material, as well as inequality in the grain. The weather was so windy and cold that I could not make proper drawings of these sculptures, but the accompanying rough sketch will convey some idea of their position, particularly of those to the arrangement of which I would call attention, as follows :—

First niche, from proper right, male figure erect with a spear ; 2nd, female figure "Pudnavati" or "Maya Davee;" 3rd, Budha seated ; 4th, Mahadeva and Parbutti, commonly called "Gouri Sunkur;" Parbutti seated on Mahadeva's knee with the bull Nandi at his feet, and the Sinha or lion at her's ; 5th, male figure erect with four arms ; No. 6, male figure riding on the shoulders of another ; 7th, the Lingum and Yoni ; 8th, male half figure "Aruna?" 9th, Mahadeva and Parbutti repeated ; 10th, male figure erect holding a lotus in each hand, probably "Surya;" 11th, Gunesha ; 12th, female figure with four arms, attended by Nandi and Sinha, perhaps meant for "Durga," 13th, male figure standing on a prostrate figure. After these, nine niches have, what appears to me to be, Durga slaying Mahésh Asúr, with her trident ; she has one foot on the buffaloe's neck and holds it by the hind leg. This subject is repeated on many detached rocks. The Linga is of as frequent occurrence. There is one very large four-faced Linga called the Choumurti Mahadeva, such as may be seen in the caves of Ellora ; it is of common occurrence in this district. This subject of the Linga I shall reserve also for a future paper, and here take leave of the Kowa Dol.

We now proceed eastward for half a mile or more, then skirting the southern base of the main cluster for a mile, an embankment is met with connecting one spur of the hill with the other, which together

forms a kind of amphitheatre or recess; the ground is strewn with bricks and potsherds, denoting the existence in former times of a large town. The first object the visiter is led to is a strong spring of clear water murmuring through the fissures of the rock at the base of the northern ridge and disappearing under ground beyond a basin or small reservoir of modern construction. This water is called the "Patal Gunga," the Ganges flowing beneath the earth. I need not state the absurd stories connected with this natural curiosity; a fair is held here yearly in the month of August.

We are next led up the steep and slippery face of a bare mass of sienite for more than an hundred feet, when the remains of a rudely constructed wall (connecting the masses of rock) appear; passing these for a short distance, and sliding down a block, worn smooth by the process, we find ourselves beside the first cave (See plate VIII. fig. 4) called "Viswa Mitra." The first apartment is square or rather pyramidal like Egyptian works.

The dimensions being 7' 9" at top and 8' 9" at the base; the height 6' 8½" outside, 6' 7½" at the inner end, in the centre of which is a doorway likewise narrow at top and wide at the base, (a feature common to all the caves,) this leads into an unfinished chamber of an irregular oval form: on the east side of the first room, is the inscription marked as fig. 13 pl. IX. There are four sockets about 6 inches in length by 2 inches wide, two on each side on the floor of the outer chamber, apparently to receive some kind of frame work. There is a precisely similar arrangement at the Aswastema terrace over the great inscription of Dhowlee in Cuttack.

Leaving this cave we pass under the mass of rock in which it is seated, in an easterly direction between huge detached masses, here and there connected with rude walls or piles of stone; some fallen pillars and hewn blocks are the only remains of what was once a gate-way, beneath which are the traces of a flight of rude steps, and a causeway leading down into the amphitheatre first described; a few yards further west bring you into the elevated valley or basin: on the south side are the two ridges of rock out of which the three great caves are excavated. The length of this table-land may be three furlongs or more, and greatest breadth one and half. The whole space except where there are the remains of tanks, is strewn with bricks and potsherds, and

there are traces of numerous foundations apparent in every direction ; to the north is the peak called Sidheswar and Burabur, immediately under which, and of a second not so high, are the remains of a fine gateway and a massive wall connecting the two, and the immense blocks which appear to have served as bastions : this passage leads down into another and extensive level, surrounded with hills, which likewise appear formerly to have been connected by walls and embankments, to have had large reservoirs and been covered with habitations ; indeed, this is not confined to the two spots now described, but has been continued further eastward, connecting the Nag-arjuni hillocks until the river Phulgo or Mahanudda was reached ; one low hill has been evidently used as a grand bastion, it is called absurdly Sher Shah's Bungalow ; a causeway leads to it ; it may have been appropriated by the early Muhammadans, but it is undoubtedly part of these most ancient Indian works, the name even of which is lost to us, unless the place be that mentioned in the inscription of the Nag-arjuni cave, to the description of the locality of which it answers.

I must now return to the great caves. The first of these is the "Kurun Chowpar," and faces the north ; it is entered through a narrow Egyptian doorway, as already described, the room is placed east and west, and has a segmental roof, as have all except the Viswa Mitra ; the ends are at right angles and plain, on the western there is an altar or throne as shown in the plate ;* the whole surface except the floor is wonderfully polished ; the echo is very beautiful in all these caves. The dimensions of the room are 33'-6" \times 14', and 10'-9" to the crown of the arch, the side wall or faces being 6'-2" to the springing line. The labour of cutting and excavating such a chamber in the hardest of rocks must have been great indeed, but that of polishing such a surface almost incredible ; we are struck with amazement and rivetted to the spot : from the quantity of chips of hæmatite strewed about, I am inclined to think this mineral was used in polishing. My servants having delayed on the road and arriving late, I was obliged to pass the night in this chamber with a bundle of rice straw for my bedding and covering, and although the wind was very high and cold, the temperature within was not so unbearable as to prevent my enjoying a good night's rest ; the bears having been graciously pleased to forego their visits, as I kept a candle

* This throne appears to be the "Sri Asanam" mentioned in the Pali Annals.—M. K.

burning which I had accidentally brought with me. But to return to my subject, on the left corner of the door is the inscription number 5, plate IX. which is nearly obliterated, through the effects of the weather and probably by the hand of some fanatic, at a very remote period, it is much to be regretted, for there is just enough left to excite our curiosity, and show that the record was valuable : I have restored as much as I well could ; it appears to have entirely escaped notice hitherto, indeed, although a square space has been cut and polished, it is but barely perceptible, and not at all in the strong light of noon-day ; it is best seen by clear moonlight standing beneath. I availed myself of the opportunity before I lay down to rest, to trace all the visible letters with red ochre ; sunrise and sunset are also favorable periods, which I remarked upon in my notes on the inscriptions of Cuttack. Dr. Bland, H. M. S. *Wolf*, made the same discovery whilst tracing the inscription at Singapore. I shall revert to this subject when treating of the whole of these Pâli inscriptions together.

There are eight other short sentences, of some of which James Prinsep gave translations in the sixth volume of the journal, but as he had only very imperfect impressions with Persian labels, the work of a pedantic Kaith employed by Mr. Hathorn, he was led into error and difficulty thereby. I shall therefore embody the whole in a separate plate,* for easy reference : these I must again refer to under the head inscriptions.

On the right hand, facing the cave and separated from the main mass, is another, the eastern end of which has been scarped and a terrace cut ; in this face are three niches with carvings rudely executed ; the right hand one contains the linga, the two others, apparently figures of Siva and Parbutti, but they are undoubtedly of far later date than the caves, and the same as that of the sculptures at Kowa Dol and on the Sidheswur mount.

We now proceed to the largest caves, two in number, entered on the southern face of the ridge of rock, parallel with that of the cave above described, and which ridges are about 950 feet long, and 70 across, with a narrow passage between. There is a space of about 100 feet wide between the main hill and rocks and these ridges ; this is filled for some depth with bricks, earth and hewn stones, the ruins of temples, so as to block up the entrance of the westernmost cave,

* See plate IX.

leaving just room to crawl in, in a sitting posture ; these may be the remains of the temple alluded to in the two inscriptions translated by Prinsep, and which, as he justly conjectures, are of a far more modern date than the caves or the Pâli inscriptions which record their construction, and first appropriation. I am in hopes of having a passage cut in front of the rock and doorways, by which means the water which now floods the caves will be let off and prevented again reaching them, and admit a free passage for visitors, and perhaps bring to light some hidden curiosities.

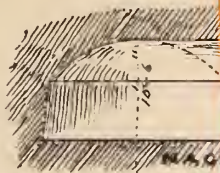
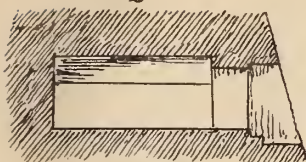
Figure 6, pl. VIII. will best explain the shape of this curious work of patience and labour ; the entrance has an outer recess or porch about three feet deep, the doorway of Egyptian shape, is six feet high ; the room is highly finished and polished though perfectly plain ; there is a niche in the centre of the east end, and on the west the singular convex end or side of the circular inner chamber with a projecting hood or dome like a mushroom, with its tapering doorway, faces the visitor, who, if inclined to the study of Buddhist antiquities, will at once exclaim this is a Dehgope or cave Chaitya. On the left or east side of the entrance (outer) recess is the purposely mutilated inscription marked fig. 5, pl. IX. of which sufficient is left to show that in the 12th year of the reign of the beloved Rajah, this "Nigope" cave was excavated ; unfortunately the first syllable is doubtful, but the second is not so, and suffices I think to settle the point of the cave being a Chaitya or shrine ; indeed I am inclined to believe that three of the four on this hill were such, for the common name of "Sutgurba," which the Kaith moonshee, taking the word "sat" as a numeral, wrote "huft khaneh," or seven chambers, the meaning generally however, though improperly given at the present time, should in my estimation be rendered the caves of righteousness. In the Pâli annals, the spot it called "Suttapanni Gurba," i. e. allowing my inference before explained as correct. The other caves at Nag-arjuni were perhaps not so, but intended as habitations for the ascetics, as already shown.

The extreme lengths of these chambers from end to end, as well as their width and height to crown of vault will be seen in the plate.

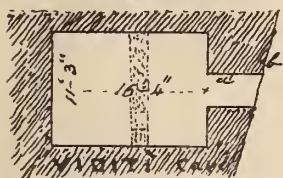
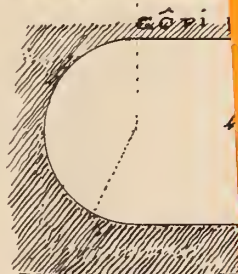
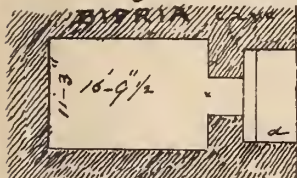
At the end and further east of the above mentioned, is a second double chambered cave of the same shape, but has remained unfinished, the sides only being polished and the vault left in the rough, as well as the

Plans & Sections, Barabur

2



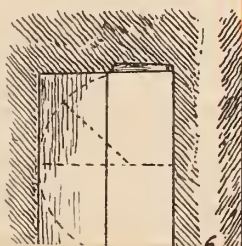
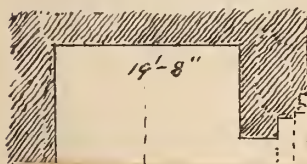
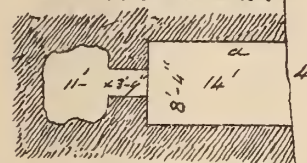
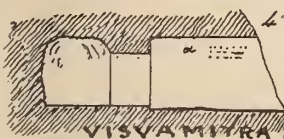
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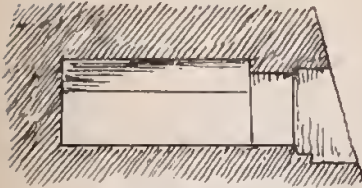
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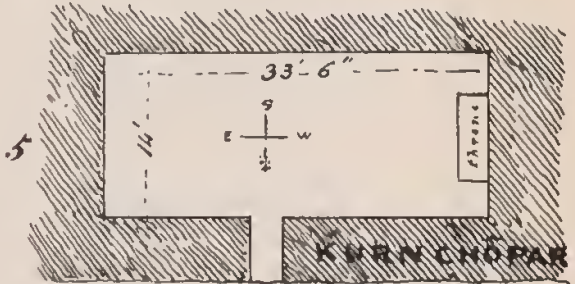
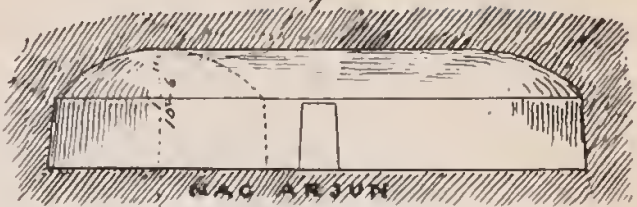
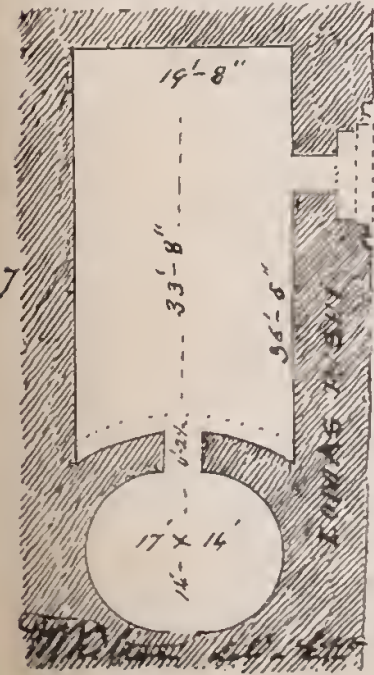
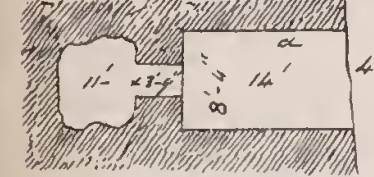
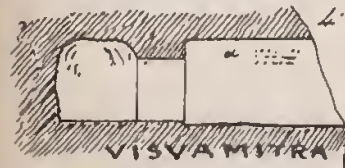
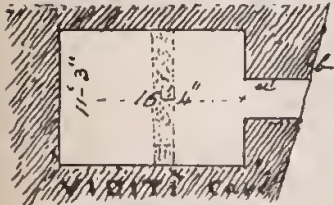
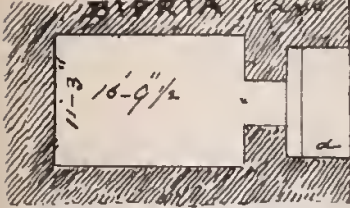
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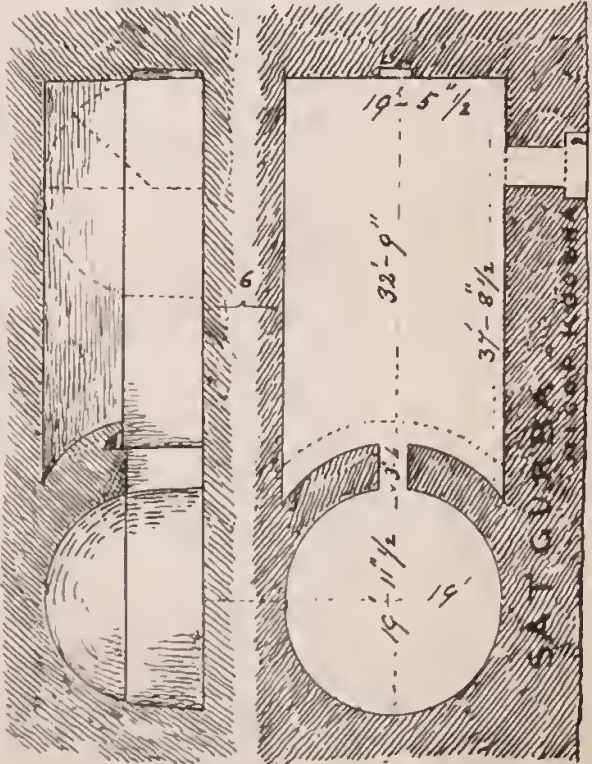
2



3



Scale 20' to the inch



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6

√	E	C	L	H	X	F	I	G
A	R	O	N	M	S	T	V	O
P	B	D	O	A	Y	:	L	T
U	C	J	Z	W	K	L	M	N
I	H	F	E	T				

13

[illegible]

¹⁶ ॐ विष्णु ॐ विष्णु
¹⁶ ॐ विष्णु ॐ

Chaitya at the end. This is called by Buchanan, "Lomas Rishi;" he gives a wood cut of this singular archway and frieze carved out of the solid rock over and about the usual shaped door, but as I shall have to draw attention to the peculiar style of architecture it displays, I have annexed a drawing of my own;* there is no Páli inscription here, nor are there any traces of there ever having been any. The inscription No. 15 Pl. XXXVI. of the VI. Vol. of the Journal, occupies the spandril under the arch, also those marked 18 and 19, in the same plate, which are immediately under the other and above the head of the doorway. This external sculpture still retains the beautiful polish originally given to it.

Having described these caves I must conduct my readers to the summit of the "Kurun Chowpar" or "Sidh Eswar" Maha Deva, to this there is an almost impracticable and dangerous path on the southern face by which I ascended, having done so, I found the crest of the hill strewn with potsherds and bricks, and a narrow passage with Lingas and figures of "Ganesha," rudely carved out of the masses of rock, the same as at the Kowa Dol; steps are here and there cut in the rock, and innumerable fragments of hewn stone lie scattered, over which the traveller climbs till he reaches a level spot, 50 feet or more below the highest point; on these are fragments of idols and one entire figure of Varaha; there are two rows of sheds used by the confectioners, when the fairs are held. Upon ascending the peak we arrive at a modern building called Sidheswar, in which there are several large idols of considerable antiquity, on one of them is an inscription, see fig. 13 plate IX. In a dark chamber is a huge linga with garlands made of solah hanging over it; some portions of the base of the temple remain; these, together with the fragments strewn about, and the great extent of the terrace, show not only that one magnificent temple at least must have crowned this height, but from their being fragments of various styles, that there have been successive temples; and I am further inclined to think, that there may have originally been a tope like those of Bhilsa, Sarnáth and Manikyala, though from discoveries made, there would be no reason for the worship of Siva (as Sidheswar) not being observed in connection with that of Budha, in the same vicinity, for not only is this anomaly apparent at the western caves, at Cuttack,

* This drawing is omitted as it will appear in connection with the subject of Buddhist architecture hereafter.

Maha Bulli Poorum, Girrinár, &c. but in this district also, where it must have been up to the latest date : Even now, I consider it more than probable that the mút or monastery of Bôdh Gyal was originally a joint Budha and Saiva establishment ; it is now the latter only ; but this is a digression, the subject is one affording an ample text for a separate paper.

That this temple of Sidheswar is of remote date we can infer from the early character of the sentence No. 6, Plate XXXV. Vol. VI. of the Journal, and of mine, of which a translation is given at page 679 of the same volume, "the irresistible and auspicious Joganund salutes Sidheswar ;" here then we see, how necessary it is in carrying out such studies, that the traveller should accurately copy even the most trivial sentence or word ; the more I see the more I learn the value of this, therefore I would impress it on my fellow-labourers, and at the same time never to trust to native copyists.

On leaving Sidheswar peak, I descended on the north side, the face of which, though as steep if not more so than on the south, has a much more gentle and practicable path laid out diagonally towards the east, and in some places steps have been cut in the rock ; this passage leads on to the lower land already described as the site of a city. After proceeding for half a mile towards the river, between detached rocks, and leaving that which I have described as a tower or bastion to the left, and the Nag-arjuni peak to the right, and climbing over some masses of rock in front, the traveller meets with a large terracc of brick-work and stone, grown over with bushes with some ruined tombs ; beside this is a large brick well ; turning to the left or north at a few yards distance a small cave is seen, fig. 1, plate VIII. This is the one which from the Pâli inscription Prinsep has termed the Milkmaid's Cave. The salutation to Sidheswar, written, or rather rudely cut in the doorway of this cave, No. 1 of my plate, also No. 2 of the same. This room and its porch are as beautifully polished as the rest, the dimensions will be seen by the plate VIII. fig. 1.

Upon climbing the terrace named, (which has been that of a large temple,) and looking down where there is a gap in the rock, another doorway is seen, over which is a square polished surface containing the Pâli inscription, fig. 3, plate IX. Upon entering this, the long inscription, fig. 9, plate X. is found cut on the right hand side of the entrance.*

* NOTE. For easier reference the spots where the inscriptions occur are marked a and b, on the plans.

There is but one chamber, this has been divided by a thin brick wall by some Mahomedan fakir, perhaps several centuries back, the doorway or aperture to which is so small as to have prevented my entering it, but I felt the end with a 10 foot rod. From the fragments found scattered, I conclude that there must have been a very handsome temple here of very early date.

Retracing our steps and turning to the south, we descend through a passage between a row of huge blocks of sienite, which had formed part of the southern barrier to the great enclosure, we then come on to the plain, then turning to the left (or east) and continuing to a tope of Tar-trees under the Nag-arjuni's frightful crags, we reach a flight of steps, about the centre of the hill; after an ascent of about 60 feet a narrow terrace is found continued along the side of the rock, in the centre of which an Egyptian doorway leads you into a splendid oval-shaped and vaulted room, polished in the usual manner; over the doorway is a square polished surface containing the inscription No. 1, pl. IX, is 3 of Prinsep's plate, and on the left hand side of the passage or thickness of the rock, is that given in his plate XXXIV. and translated at page 673; on the opposite side are some more recent scrawls.

This cave is inhabited and has been so for many years, by Mahomedan saints; there is a small mosque before the door, more than a century old; the cave is called Nag-arjuni, whether from the Buddhist saint of that name having lived there, or from mere fancy it is not possible to decide, though as the name Sidheswar has been preserved, and if my version of "Satgurba," be correct, I see no reason to doubt the inscription, moreover I am inclined to think that it is the very peraputetic chamber named in the Pāli annals in which Annund Mūni performed his austerities.

Having described the caves I must conclude with Dhuravat.

I have already said that it is the north-westernmost end of the cluster of hills. I visited this place by moonlight, therefore had not so good an opportunity of examining the locality, however, I saw sufficient to enable me to decide that there is the site of a Buddhist temple. On the lowest hillock, at the head of which is a fine tank called Chundoke, many idols and miniature Chaityas, such as are found all over the district, are placed in and about a modern temple to "Nirsinha" on the east bank of the tank: there is one very remarkable figure of a

man with twelve arms, each hand holding a lotus ; it is a Buddhist sculpture. I was told of several other figures in the vicinity, but had no leisure to examine them, those I saw were comparatively modern, mostly well executed. To the northward of the tank is a high mound of bricks and rubbish, perhaps the ruins of a monastery or of some of the buildings of the ancient town, of which nothing else remains.

I will now offer a few words on the inscriptions, of which there are in all 29 ; including that on the idol at Sidheswar, six are in the old Pâli, three in the Gupta, and three in an unknown character, to which I shall invite particular attention, and the remainder are in various types of Nagree, from the earliest to latest date.

Plate IX. Nos. 1 and* 2, are those numbered 3 and 2, in Prinsep's plate. No. 3 had hitherto been overlooked, being in the same cave as the long inscription No. 9, plate X. It will be perceived that there is a slight difference in some of the words of the three, perhaps errors in cutting, otherwise they are verbatim. The same, excepting the initial name (of the cave), I have neither books to refer to nor pundits to consult by which I might explain these variations, therefore I must content myself with inviting the attention of those who are more fortunate, and who are better scholars.

In fig. 1 the word 𑀧𑀺𑀭 "Gopi" is clear enough, but instead of the last word of the inscription being 𑀧𑀺𑀭 Aliyam, it seems to be 𑀧𑀺𑀭 Sooliyam, though I am inclined to think it is merely a mistake of the engraver. 𑀧𑀺𑀭 "Nisiti" is written 𑀧𑀺𑀭 "Nisita" both in Nos. 1. and 3., No. 2. on the contrary has neither change ; indeed with the exception of five letters, purposely hammered out, it is quite perfect, (a stronger proof of the soundness of Prinsep's conjectures could not be needed, the copy he had being very imperfect ;) however, knowing what they should be, it was no difficult matter to trace them, but it must be observed that all the inscriptions in the lath or Pâli character have had the letters ground and polished after cutting, to which circumstance their better preservation must be attributed ; moreover all have been cut on a polished surface. I speak of those I have myself seen ; those in our museum afford proofs.

In No. 2. the word 𑀧𑀺𑀭 is deserving of notice, the second letter



being more like 𑀧 h. but the mark is placed lower down, and may be equivalent to the short ikar of the Sanscrit, though it has been supposed not to exist in the Pāli; this would at once make it वप्रोह instead of वप्रोय. वप्रोह appears to have no meaning.


No. 3 over the doorway of the cave which appears to have escaped notice, has the word 𑀧 𑀢 𑀭 वडयी the meaning of which I know not; in other respects the inscription is a repetition of those before named.

We now come to the three remaining Pāli writings that have hitherto been overlooked. The first (figure 4) is the most perfect, though the five last letters which I feel warranted in restoring have been hammered out as before described. Upon referring to Prinsep's papers on the pillar inscriptions P. 471, Vol. VII. I find that the sentence "Duda dusa vasa bhisitēna" 𑀧 𑀭 𑀢 𑀭 𑀭 𑀭 𑀭 𑀭 𑀭 𑀭 𑀭 𑀭 is common to them. I am enabled therefore to read that "by the beloved Rajah in the 12th year of his reign, this cave was caused to be excavated, &c." the remainder I cannot render for reasons above given. Thus much would seem to point to the same person as author both of the pillars and of these caves, and if the similarity of design and execution be considered a criterion, we may infer that it was Dusrat himself whose name is repeated with the title "beloved of the gods" in the three first named inscriptions. This reasoning it will be seen throws doubt on the assumption that Asoka was the author, a doubt Prinsep himself always entertained. Indeed, if the conjectures I have made on reading the passage before quoted of the Pāli annals, are correct, there are none, that he was not.

If we may judge by the unfinished state of caves, (Nos. 4 and 7, plate VIII.) we shall naturally conclude that they are of later date than those bearing Dusrat's name; one difficulty would thereby be removed were it not that this prince (if Prinsep be right), was the third in descent from Asoka; but it suggests a further conjecture, i. e. whether this Dusrat may not have been the very deified personage of the purans, king of Ajudhia and father of the hero Ram, whose history I believe to be a mythological tale of a real event. The conquest of Lunka or Ceylon by him may be in reality that made by a prince, whose title was Devanam Prya, or Devanam Prya Dasa, for either title conveys the same meaning. I throw out these as hints for the consideration of those who have read more and have better opportunities for study than myself.

I may here further digress and allude to the rude Budha sculptures I found at Bôdh Gyah and which I am about to lay* before the society. In these, buildings are represented with arched entrances precisely of the design of that of the great cave, which again (like those in Cuttack) are miniatures of similar designs in the caves of Carli and others in the west of India. Now it is common for Archæologists to found their arguments as to the age of ancient buildings, upon comparing them with the paintings which illumine ancient manuscripts of known date, it being evident that such forms must have been in existence at, or prior to, the representation being made, the same rule must apply to sculptures such as those of Bôdh Gyah, therefore if they belonged to Asoka's great temple, the works they represented existed before it, or at the same time at least; but as these sculptures represent buildings on rocks, we may incline to the first opinion. That the sculptures belonged to the same period as the first pillars there can be scarcely a doubt, for they are of precisely the same stone, and one the quarries of which have not been discovered; this is of itself a remarkable circumstance; besides, they bear inscriptions in the identical character, and record gifts in the same style as those on the posts of Bhilsa.

I now return to my inscriptions. Fig. 5 differs somewhat in the reading, there being an adjective between the opening sentence, and the word  or cave. This word after the most careful examination appears to be  "Nigôp," the "gôp" is clear enough, which is curious, for it is at the entrance of the very cave which I have described as having a Dagôp or Chaitya, the remaining obliterated letters amounting in number to that required for such, together with parts of them still visible, admit of our supposing the sentence to have been the same as the others, i. e. "for the one of Buddhist ascetics."

No. 6 is too imperfect to be made out without the aid of a clever pundit, and needs such a Pāli scholar as Rutna Pala who assisted Prinsep. I must content myself with inviting the attention of others possessing greater advantages. The mark  will not escape notice, it is found on coins, and in the inscriptions of the Saindharee caves and that of Kund-

* See notes on Sculptures at Bôdh Gyah, p. 334 of the present Volume.

girri in Cuttack. This inscription is immediately over the left corner of the entrance, but so weatherworn and mutilated that a casual observer would not perceive it. A sentence seems to have existed over the door, but is now become eligible.

No. 7 is that published as 15 by Prinsep (see pl. XXXV. Vol VI.) and from the awkward manner in which the separate sheets of impressions were taken by the Moonshee, gave so much trouble, and rendered the reading doubtful; by the impression I now submit,* it will be seen that, instead of its occupying three distinct spaces, the whole is comprised in one, and, as conjectured by Prinsep, it fills the spandril or space between the arched head and the top of the square doorway. I believe Kamulakanta to have been right when he pronounced that the first two lines had no connection with the four last. This struck me at first sight. I have since read the remarks, the letters are smaller, and I think have been added at a somewhat subsequent date; there can be no doubt that both have been an afterwork, perhaps centuries later than the caves.

No. 8 has also been rendered by Prinsep in the same volume, but it may be as well to compare the present accurate impression with the former; it is engraved within the jaumb of the doorway to the Nagarjuni (oval) cave, the edges are rough owing to the want of skill in cutting.

No. 9, plate X. appears hitherto to have (together with No. 3, (before described), escaped notice. I trust that some scholar will come forward to translate it, should I not be able with the assistance of a clever pundit to do so, but I shall first beg to invite Saroda-purshad to undertake the task. I feel sure it could not be entrusted to better hands. The character is the same as that of the two foregoing numbers, the dates, therefore, may not much differ. This is likewise cut within the jaumb of the small cave, fig. 3, plate VIII.

No. 10 is inscribed on either side of the head of a female figure or idol on the Sidheswar temple: It is a very rude performance.

Nos. 11, 12, 13, and 14, or figs. 7, 8, 9, plate IX. are the curious characters to which I would invite the attention of our French and German fellow-labourers. I have remarked the same characters on the Allahabad pillar, and in the caves of Cuttack. Prinsep refers to the

* This refers to the inscriptions exhibited at Capt. Kittoe's lecture.—Eds.

same as occurring at Barahut, in Ghurwal (see plate IX.) page 342, Vol. V. of the Journal. No. 11 however differs considerably, and is written vertically like Chinese; it is placed horizontally in Prinsep's plate. It has always occurred to me that these are Trans-Himalayan characters written by pilgrims at a very early period. No. 12 was not sent to Prinsep; it is rudely cut and scattered. No. 14 is a single letter or word on one of the pillasters of the Satgurba arch.

I shall not trouble my readers with repeating the whole of the smaller sentences, which had no doubt from time to time been cut by the ascetics who occupied the caves when the Budhists were expelled; there are two only deserving of notice. These I have given as 15 and 16 in plate IX. The first shows that at a remote period the presiding deity of the spot was "Sidheswar" Mahadeva, which it is still.

The second or fig. 16, are deserving of notice; they are of a very early types, and admit of another reading besides that given by Prinsep; see No. 16 in P. 679, Vol. VI. viz. it may be an abbreviation of "Bodistá Likhitá" or the writing of Budhists, for the double letter more resembles the compound स् than बु and may have been written by the fanatic who injured the Páli inscriptions, but if this reading be not admitted, I should prefer another, namely, "the root of Budhism," which (supposing this locality to have been the site of Sakya's preaching and of the great convocations of Magda, of which I think there is little doubt) would be most appropriate.

I offer the foregoing more with a view of throwing out hints for those whose deep and extensive reading must enable them to speak with greater confidence. I could wish I were able to boast of more myself; in the absence of such desideratum I endeavor to collect and make known every trifle that may tend to the elucidation of doubtful points in the early history of this vast empire, my more gifted readers must take the will for the deed and excuse any blunders.



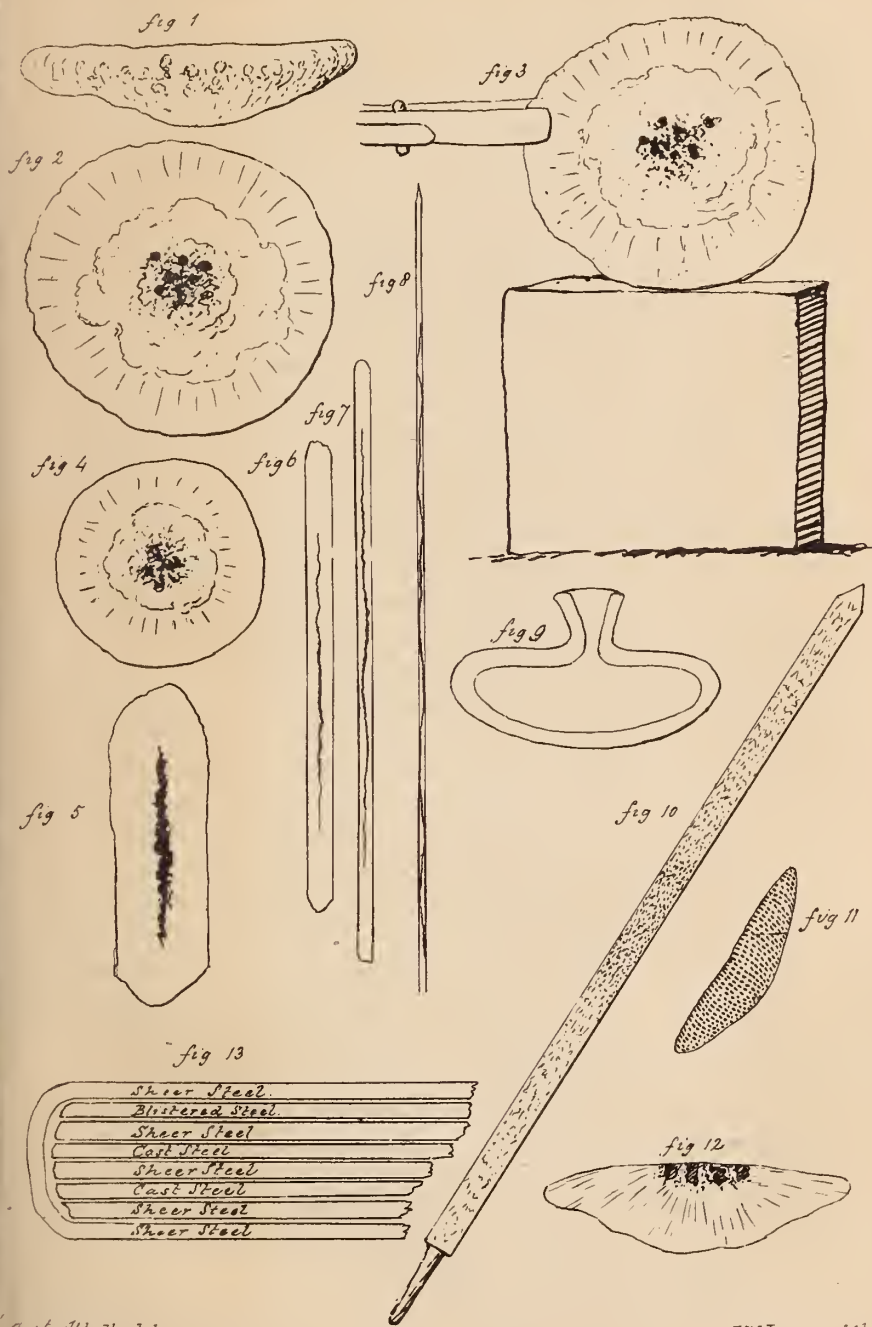
When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal

comes from the south, and can be purchased at Delhi, in large as well as in small cakes. In India, if the same question is asked, the natives reply, that it comes from the north. It is, probably, therefore, brought up the Indus and Sutlej from the Persian Gulf.

The accompanying figures 1 and 2 (Pl. XI.) represent the plan and profile of a mass lying upon the table before me. Now, upon considering the internal structure of this, we are aware that it is a bundle of concentric needles crystallized around a porous centre, the vesicles of which are coarse and apparent, formed by the splash of the metal as it fell fluid into the mould. These I have rudely represented in dots in figure 12. It is also manifest that the most solid portions of the mass are the lower or convex surface. And, accordingly, in beating it out into a bar, great care is taken to preserve each surface distinct from the other, in order that the edges of the lenticular mass may become the sides or flat surfaces of the blade; that the convex surface may become the edge; and the flat, porous surface, the back. Under any other disposition, the damask figures would be confused and unseemly—and, as cast steel cannot be welded, by any art known in Asia, the porosity of the centre of crystallization in the mass, would either offer a jagged, flawed edge, or one of the sides must be disfigured and weakened by it. And thus the arrangement pursued in the fabric of the simple damask blade is suggested by sound sense. The elegance and symmetry arising from the arrangement is the accidental but necessary consequence.

The mass of cast steel being brought to red heat and held, as represented in figure 3, edgewise upon the anvil, is beaten into a square prism or bar—an operation of about two hours duration. When the requisite length is attained, the bar is flattened under the hammer, those sides in the bar, which had been the edges, being placed, the one above the other below, so as to become the flat surfaces of the blade. The blade being shaped with the hammer and file and roughly burnished, is brought to a dull red heat in a long charcoal fire,—a long vessel of common oil is placed within reach, and the blade is plunged by successive drawing cuts edge-foremost, into the oil; so that the edge becomes the most highly tempered part, and the back remains the softest. The excessive temper is abated in the usual manner by laying the blade over a slow charcoal fire. It is then burnished, and ground,



Capl Abbott delt

JW. Laidlay lith.

and being carefully cleansed from grease in wood ashes, white vitriol (kussees) dissolved in water is rubbed over all the surface excepting the edge. This, eating deepest between the interstices of the crystals, exhibits their arrangement which constitutes the damask of the blade.

In following the mass of cast steel through all the changes of figure produced by the action of the hammer (figures 4, 5, 6, 7, 8,) we perceive that, as it cannot be welded, the pores in the centre of crystallization must remain, although immensely elongated under the extension of the mass. These accordingly exhibit themselves in an irregular and ugly seam in the back of the blade, impairing both its elegance and its solidity. And hence it is manifest, that in order to the production of a blade without flaw, either the porous heart of the mass should be ground out previous to the action of the hammer, or the blade should be forged of excessive breadth, and the unsound back be ground away. But the necessity of either precaution would not exist were necks made to the moulds (fig. 9) in which the steel is originally cast; so that there might be a surplus of metal (as in casting bullets and guns)—to give solidity by pressure to the incumbent mass.

We further observe, that as the flat surfaces of the blade (figure 10) are formed of the edges of the lenticular mass (figure 11) they present a section across the crystallization; rectangular in the centre, but of various obliquity toward either end. It follows, that the less the original mass is altered by hammering, the more nearly lateral will be the disposition of the dots representing the ends of crystals—and hence the various figures presented by the same metal under slightly different treatment. It is also apparent, that these figures will materially alter, according to difference in the shape of the original mass—and it may be reasonably doubted, whether the shape in which the cast steel is brought to India, be the most conducive to symmetry of damask or to soundness of fibre.

As the damask of a blade is the map of its crystallization, so it is probable that the figures alter according to the purity of the iron of which the steel is formed, the quantity of carbon contained in it, or to both these circumstances combined. Nay, the degree of heat of the fused metal at the time of casting, and the temperature of the mould in which it was formed may both contribute to differences in the crystallization.

Col. Anosoff, himself the reviver, if not the inventor of the elastic damask, lays down the following laws, as the test of quality of the damask, viz.

1st. The Damascene formed principally of right lines, almost parallel, denotes the lowest quality of damask.

2d. When the right lines become shorter and are partly replaced by curves, they denote a better quality than the first.

3d. When the lines are interrupted, show points; and when the dimensions of the curves increase, this is a still better symptom.

4th. When the interrupted lines become still shorter, or rather when they change to points as they increase in number, so as to form in the breadth of the steel, here and there, as it were, nets, interlinked by threads, which undulate in diverse directions from one net to the other; in this case the damask approaches perfection.

Finally. When the nets open further to form figures resembling grapes: or when they occupy the entire breadth of the steel and partake it in nearly equal articulations, in that case, the damask may be recognised as of the highest possible quality. See Appendix, 2d Vol. p. LXXVI. Abbott's Journey to Khiva, &c.

Now, whilst I concur with Col. Anosoff in believing that a connoisseur may read the quality of damask steel in its Damascene, I rather doubt the above being the key to the language,—because the globularity of the marks must depend very much upon the angle of section of the crystals, an angle dependent upon the figure in which the steel was first cast.

Several very costly damask blades were exhibited to Burnes at Cabul, and it was explained to him, that they were valued according to the continuity of the flossy streaks from hilt to point. I myself observed when in Khorussaun, that a decided preference was given to the streaked variety, viz. to that which appears like an amalgamated mass of infinitely fine wires. It will be seen from the process of forging the simple damask that any continuity of fibre must be a mere accident, and denote nothing as respects the quality of the metal.

I have before me a beautiful specimen of Siberian damask, given me by Anosoff, and presenting upon its surface the prismatic play of colors which he values so highly. In appearance it differs from the Jullalabad blades chiefly in the greater uniformity of its interlaced streaks;

attributable probably to a better figure in the mass of steel from which it was forged. It is perfectly elastic. The simple damask of Jullalabad being tempered in oil, has little elasticity, and the makers will not warrant it to undergo any proof. It is liable both to bend without recovery and to snap short on concussion. The same is observable of the damask of Khorussaun, constructed by a similar process. The cast steel when tempered in water becomes too brittle for sword blades, and the elasticity given by oil is not greater than that which brass possesses.

A very elegant elastic blade which I purchased in Siberia, and thought cheap at 20 guineas, exhibits a damask of oval concentric rings, so regular and beautiful that I would not believe it to be real damask, until a portion of the blade had been burnished and the acid applied in my presence, when the re-appearance of the Damascene, placed the matter beyond doubt. I have seen a similar though less beautiful Damascene upon daggers forged at Isfahaun. It is difficult to imagine this to be the mere exhibition of crystallization.

The simple damask of Jullalabad is wrought into three figures. The very narrow, rather thick, much curved Khorussauni sabre—whose section is an abrupt wedge, unwieldy in the grasp and as unfit for offence as for defence.

The broader, much curved, plain or fluted blade of Damaseus, with a double-edged point, which its curvature nullifies. And a long straight single or double-edged blade, broad, thin and fluted, wider near the point than at the hilt: always set in a basket hilt, with a pommel projecting three inches to protect the sword-arm and much used by gladiators who exhibit at the Mohurrun. All are forged in the same manner from the same material, yet each has its own separate Damaseene, owing to the greater diffusion of the grain of crystallization in one kind than in the other. In the very narrow blade it is more streaky—in the broad blade it more resembles the most delicate of the streaks upon watered ribbands. The darkening of the blade toward the edge, observable in Khorussauni sabres, is not visible in these—I attribute this darkness to an increase of carbon. But at Jullalpoor the sword-cutters think it proceeds from increase of temper, and that the stain upon the damask is dark according to the degree of its temper.

Such is the secret of the pretty but useless damask of Goojrat ; at least of the simple variety. The compound damask is far less elegant, but constitutes a good blade, little inferior perhaps to the produce of Salinjer, though certainly less elastic. The following is the process employed in the fabric of the Sukkaila or compound damask.

A ribband of keeri or sheer steel being bent into the figure of a siphon (fig. 13) is filled with six or more ribbands of cast steel, blistered steel and sheer steel as per accompanying diagram. I distinguish between cast steel and blistered steel, because the first has been in actual fusion, whereas the second appears to me that which goes in England by the name of "cast or blistered steel," and comes from Europe in small square bars. This mass being well hammered at welding heat, is doubled,—welded, redoubled and rewelded. A small bar of sheer steel of similar length is then welded upon the side which is to be the back, and a similar bar of cast and blistered steel well mixed together is welded for the edge. It is then beaten out, flattened and shaped into a blade, and tempered in water. The Damascene of this blade is coarse and resembles the transverse lights upon a watered ribband. It has a moderate elasticity, if well tempered : but of course its quality must depend chiefly upon the fineness of the steel employed in its fabric,—and there is little choice of material in India.

There is no doubt that a blade may thus be constructed, the edge of which may be keen as that of cast steel, whilst sufficient elasticity is preserved to render it proof against distortion or fracture under very severe shocks. And if, instead of thick ribbands of the several metals, fine wires were employed, an elegant Damascene might be the produce. This I am inclined to think is the original Damascus blade, as distinguished from the blade of Isfahan : for, as its celebrity was greatest, when defensive armour was in common use, it is absurd to suppose it could have resembled one of the faithless brittle blades of cast steel, which now bear the name.

The price of the Jullalpoor or Goojrat blade in a scabbard, without hilt, varies from 8 to 12 Rs. (16 to 24 shillings.)

The instruments employed in the manufactory are rude and imperfect. Yet as the solidity of a sword blade depends much upon the quantity of labour expended in hammering, the very imperfection of the implements may tend to the excellence of the work. A bar of steel



Porcula Sabranica. Rigney Hog of Saul forest.

under a very heavy hammer is soon beaten out ; but every blow unsettles on either side, as much of the crystals of the steel as it has compressed beneath it :—and I believe, that four times as much labour should be bestowed in hammering the slightly heated bar, as at present it receives at Jullalpoor.

But the imperfection of the furnace tends wholly to that of the blade. For as it is impossible to give the same degree of heat to all parts of the weapon at the same time ; one portion becomes harder and more brittle than the other : and the blade is more liable to fracture than if the whole were equally brittle. The equal distribution of heat throughout the blade is perhaps attainable only by immersion in molten metals ; a method practised, I believe, by Savigni, the celebrated cutler.

Should you deem this worthy of publication in the Society's Journal, I believe it will be the only existing record of the process of making the simple damask sword blade.



On a new form of the Hog kind or Suidæ, by B. H. HODGSON, Esq.

Pachydermata.

Suidæ, Genus *Porcula*, mihi.

Generic character—Teeth $\frac{6}{6}$. $\frac{1}{1}$: $\frac{1}{1}$. $\frac{6}{6}$: $\frac{6}{6}$ =40.

Canines small, straight, severely cutting, but not ordinarily exerted from the lips. Fourth toe on all the feet, small and unequal. Tail very short but distinct.

Type *Porcula Salvania*,* mihi.

Pigmy Hog of the saul forest.

Sáno Banel and Chota Súvar
of the Natives.

Habitat, Saul forest.

Sp. Ch. Pigmy Hog of a black brown colour, slightly and irregularly shaded with sordid amber. Iris Hazel ; nude skin, dirty flesh colour. Hoofs, glossy brown—length from snout to vent 18 to 20 inches. Height 8 to 10 inches. Weight 7 to 10, rarely 12 lbs.

Precision and comprehensiveness certainly belong to technical descriptions ; and the above few words, though they may prove distasteful

* शाल्वन्या, of or belonging to the Saul forest.

to the general, will be largely suggestive to the instructed reader, and at the same time convey to the latter more information than he would obtain from five times the space occupied with popular description merely. A description of the popular kind I will supply presently ; but in the meanwhile I must proceed distinctly to state the grounds upon which I suppose the Pigmy Hog to represent a new form among the animals of its kind. My books are few for reference, and my materials scanty for examination ; but, having made the best use in my power of both, I shall not hesitate to tender to the Society the results of my investigation of a new and most rare species in that shape which appears to me most calculated to stimulate further research, reserving for a future report any additional information I may myself obtain in correction or confirmation of my present views ; for I am entirely of the opinion of the late able institutor of our journal, viz. that it is designed as a prompt record of current facts and suggestions, to be stated as made, and to be corrected with recurring opportunity.

Mr. Gray, in his recent and excellent catalogue of the immense stores of the British museum states that there are five genera of the Porcine family, or *Sus*, *Dicotyles*, *Babirussa*, *Choiropotamus* and *Phacochærus*. Of these I regret that I have no means of satisfactory reference for *Choiropotamus*. But it and *Phacochærus* are exotic forms not easily mistaken, and I apprehend cannot comprehend our present subject ; nor can *Babirussa*, though an insular Indian type ; for its characteristics are well known. There remain only *Sus* and *Dicotyles*, or the Hogs proper and the Pecary hogs ; and, that our animal belongs to neither of these, but is an interesting intermediate link between them, will I think be at once apparent from my generic definition, or from that and what I shall now add thereto relative to the organization and habits of the Pigmy Hog. My materials for description consist of a male of the species, young but sufficiently grown to indicate its fixed characters, and fresh but deprived of its entrails. I have had its skull extracted and have compared carefully its general form and its cranium with those of the tame and of the wild hog and of their young, and I have studied all these under the guidance of Cuvier and his commentators as well as of the general zoology of Shaw.* As the result of these

* *Régne animal*, Vol. III. pp. 330, 334 and 401, 414 ; *General Zoology* II. 458, 470, and *Régne animal*, V. pp. 287, 290.

observations and references it appears to me that the Pigmy Hog of the Saul forest is almost equally allied to the true Hogs and to the Peccaries, agreeing with the former in the absence of any peculiar external organs, such as the gular flaps of *Larvatus* and the pelvic sac of *Torquatus* and *Labiatu*s; also in the number and form of its incisor teeth, and in having a perfect tail and four overt toes to each foot, but differing from the true Hogs and agreeing with the Peccaries in the number of its molar teeth, in the style of the laniaries, and in the diminished elongation of the jaws; and showing yet further inclination towards the same form (*Dicotyles*) by the extreme smallness of the tail as well as by the tendency of the fourth toe to disappearance. The presence of a tail and of a fourth toe, with the limited number of molars and the straightness of the unexserted laniaries, are the positive characters of our proposed type; which, how like soever to the ordinary Hog, differs therefrom materially in structure and not less in manners and habitat; for, whereas the Hog abounds all over India, the Pigmy Hog is exclusively confined to the deep recesses of primeval forest, and hence (I believe) has entirely escaped all notice by Europeans up to the present hour; and, whereas, again, the grown males of the common Hog invariably dwell apart, those of the Pigmy Hog abide constantly with the herd, and are its habitual and resolute defenders against harm. I obtained my single specimen recently in the Tarai of Sikim; but I know that the species dwells also in the Tarai of Nepaul: nor have I any doubt it inhabits as far north-west and south-east, as the Saul forest extends, though such are its rarity and secludedness, that knowing of its existence and anxious to procure it as I have been for 15 years past, I have only just succeeded. Even the aborigines whose home is the forest, seldom see and still seldomer obtain it, much as they covet it for its delicious flesh, and eagerly as they search for it on that account; and an old Mech who brought me mine, informs me that in 50 years' abode in the Sál-bári or Saul forest, though a hunter every season, he never got but 3 or 4 of these much desiderated animals to eat, partly owing to their scarcity and partly to the speed with which the females and young disperse, and to the extraordinary vigour and activity with which the males defend themselves whilst their families are retreating.

That so tiny an animal should effectually resist men must seem

almost incredible, and yet I am credibly assured that even when the annual clearance of the undergrowth of the forest by fire occasionally reveals the Pigmy Hogs, and the herd is thus assailed at advantage, the males with the help of rough and unopen ground really *do* resist with wonderful energy and frequent success, charging and cutting the naked legs of their human or other attackers, with a speed that baffles the eyesight and a spirit which their straight sharp laniaries renders really perplexing if not dangerous. The herds are not large, consisting of 5 or 6, to 15 or 20, and the grown males, as I have said, constantly remain with and defend the females and young, *perhaps* pairing off for a short period in the season of love, of which there are said to be two in the year, and the litter to consist usually of but 3 or 4 young ones. Their food is chiefly roots and bulbs, but they also eat eggs, young birds, insects, and reptiles, having a good deal of the omnivorous propensity proper to the whole family (Suidæ).

The Pigmy Hog is about the size of a large Hare, and extremely resembles both in form and size a young pig of the ordinary wild kind of about a month old, except in its dark and unstriped pelage. The likeness of the limbs and members to those of the common Hog is so close that every purpose of general description of the Pigmy Hog is served by pointing to that resemblance, desiring only that heed should be taken by the observer of the shorter jaws, and eye consequently placed midway between the snout and ear; of the much shorter tail, nude, straight, and not extending so far as the bristles of the rump; and, lastly, of the smallness of the inner hind toe. The ears also are quite nude, and the abdominal surface of the neck as well as the insides of the limbs and the belly, are nearly so: but the upper and lateral external parts are covered thickly with bristles, even longer and more abundant than those of the wild or tame Hog, save upon the ridge of the neck where the common Hog has always more or less of, and generally a conspicuous, mane, but the Pigmy Hog, little or none. The hairs of the Pigmy Hog are from two inches to two and a quarter long, harsh, simple, or with the tips ordinarily bifid; and those of the face and outsides of the limbs shorter only than elsewhere.

The dimensions have already been stated summarily and will be set down in detail below. The colour of the animal is a black brown, or brown black, shaded vaguely with dirty amber, or rusty red—a result of



many of the bristles being partially or entirely of the latter hue, but so that the general surface exhibits no regular lines, nor the individual hairs any regular rings. The scull of the Pigmy as compared with that of the common Hog exhibits a very considerable contraction of the great length of the facial portion or jaws in *Sus* proper, leaving no room for the extra molars of the common Hog, which has seven in each jaw, above and below, whereas our tiny friend has only six ; by zygomæ less curved and bulging ; by smooth maxillars and intermaxillars, so unlike the rugged outline of these bones caused in the common hog by the retroversion of the canines ; and, lastly, by orbits more nearly complete, having larger processes from the zygomæ as well as from the frontals.

And now, first pledging myself to transmit to the Society without delay all the further information I may obtain relative to the habits or the structure of this interesting species, which if obtained alive and induced to breed in captivity, would be to the ordinary pork of the larder what the delicious Gaini beef is to the flesh of the common Ox, I conclude with the detail of dimensions, and with pointing attention to the accompanying accurate drawings of my accomplished draftsman.

Snout to vent,	1	7	0
Head to occiput,	0	6	0
Tail,	0	0	$\frac{7}{8}$
Fore leg, elbow to tip of hoof,	0	5	$\frac{1}{4}$
Hind leg, heel to ditto,	0	4	$\frac{1}{8}$
Length of ear, from front,	0	1	$\frac{7}{8}$
Width of ear,	0	1	$\frac{5}{8}$
Mean height,	0	9	0
Snout to eye,	0	3	0
Eye to ear,	0	2	$\frac{3}{4}$
Girth behind shoulder,	1	1	$\frac{1}{2}$
Length of fore hoof,	0	0	$\frac{11}{16}$
Width of ditto,	0	0	$\frac{1}{2}$
Weight,	7	lbs.	

SKULL.

Length,	0	5	$\frac{1}{2}$
Width,	0	2	$\frac{1}{2}$
Weight,	0	3	$\frac{3}{4}$
Symp. intermax. to fore angle of orbit,	0	2	$\frac{7}{8}$

Teeth $\frac{5}{6} : \frac{1}{1} : \frac{1}{1} : \frac{5}{6} : \frac{5}{6} = 40$; the two first molars only, on each side, false and compressed, and not the three first as in *Sus*, which has $\frac{7}{7}$, or one more, above and below. Tushes moderately elongated and not much curved—according to information *and* to the specimen, which latter, on this point only, is hardly adequate to fix the type.

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*Notices and Descriptions of various New or Little Known Species of Birds.* By ED. BLYTH, Curator of the Asiatic Society's Museum.

(Continued from page 157.)

*Motacillidæ*. This is a strongly marked family of birds, especially characterized by the lengthened and pointed tertiaries (as in the Plovers and Sandpipers), by the regular double moult,\* and by the ambulatory gait of the species. I consider them to be nearly allied by affinity, neither to the *Enicuri* nor to the Larks ; although the Water Wagtails resemble, to a certain extent, the former in their colours, as is commonly the case with animals frequenting the same haunts ; and the Pipits resemble, in like manner, the Larks, not only in colouring but in the elongation of the hind-claw.

*Motacilla*, L. (as now restricted). Of this there are three Indian species.

*M. maderaspatana*, Brisson (nec Lin.) : *M. maderaspatensis*, Gm. ; *M. maderas* et *M. variegata*, Stephens (nec *variegata*, Vieillot) ; *M. picata*, Franklin : *Pied Wagtail* of Latham. Inhabits Upper India, and the peninsula ; but I have never known it to occur below the Rajmahl hills in Lower Bengal, though Calcutta is given as the locality of a specimen in *Rev. Zool. &c.*, 1839, p. 40. The skin referred to may have been brought from Calcutta ; but it may be doubted whether the fresh bird was obtained there. I have once seen it from Darjeeling ; but never from the countries eastward of the Bay of Bengal.

\* Mr. Yarrell remarks—" Having frequently examined specimens of our Wagtails in the spring of the year when they were assuming either their change of colour or the additional brilliancy of tint, peculiar to the breeding season, without finding any new feathers in progress, I am induced to consider the vernal change in these birds as so many instances of alteration effected in the colour of the old feathers, and not a change of the feathers themselves." 'British Birds,' 1, 383. My own observation, both in England and in India, and in caged birds as well as in wild ones, is directly the reverse. I have shot many during the vernal moult (*Motacilla*, *Budytes*, and *Anthus*), and have even found it difficult to get one that was *not* changing its feathers.



*M. luzoniensis*, Scopoli: *M. alba*, var.  $\gamma$ , Lath., (both founded on *la Bergeronette à collier de l'île de Luçon* of Sonnerat): *M. dukhnuensis*, Sykes; *M. leucopsis*, Gould; *M. alboides*, Hodgson; *M. alba* of Jerdon's list. Very common throughout India (with some partial exceptions\*) and the Malay countries, visiting the plains in the cold weather; the appearance of this familiar little bird, and the harsh chattering of *Lanius phœnicurus*, being generally the earliest signs of the approach of that season. The common Indian Wagtail is nearly allied to *M. alba* and *M. Yarrellii* of Europe; but has a larger patch of white on the forehead, the throat is white at all seasons, and there is much more white on the wings. Back of the male black in nuptial plumage.

*M. boarula*, L. This European species is also common throughout India and Malasia; specimens from Java, &c. absolutely resembling those from England. It even inhabits Australia.

*Nemoricola*, nobis. With the general form of *Budytes*, this combines the short hind-claw of *Motacilla*, and a peculiar disposition of colours, alike different from other Wagtails and from the Pipits. Haunts sylvan, and general habits much the same as those of the Tree Pipit, except that I am not aware of its ever mounting singing into the air, or that it even sings at all. In this respect (the total absence of song) *Budytes* differs both from *Motacilla* and *Anthus*; and the humble Lark-like efforts to soar a little way into the air, singing all the while, seem peculiar among this group to the Pipits.

*N. indica*; *Motacilla indica*, Gmelin (founded on *la Bergeronette grise des Indes* of Sonnerat): *M. variegata*, Vieillot (nec Stephens). India generally, Arracan, and Malacca; but nowhere a common species, so far as I can learn. In the vicinity of Calcutta, I have obtained it at all seasons.

*Budytes*, Cuvier. The Yellow Wagtails with long hind-claw.

*B. citreola*, (L.): *B. calcaratus*, Hodgson.† Tolerably common, more so perhaps above Rajmahl, in Bengal, where it occurs in flocks.

\* Mr. Jerdon never observed it in the Carnatic.

† Mr. Gray adopts this latter name, in his Catalogue of Mr. Hodgson's specimens presented to the British Museum: but the Indian species (examples of which were presented to this Society by Mr. H.) seems to accord wholly with the descriptions of *B. citreola*; from which I cannot help doubting its distinctness. It appears that Mr. Gray has also more recently described the same bird as *B. citreoloides*, Hodgson.

From the province of Mymunseng Mr. Frith has presented the Society with a beautiful specimen, having the back deep black !

*B. viridis*, (Gm.), founded on Brown's figure, pl. 33 : *B. melanocephala*, Savi, and also of Sykes ; probably *B. beema*, Sykes ; and *B. neglecta*, *melanocephala*, *et flava*, of Jerdon's list ;\* *Blue-headed Wagtail* of Latham ; and his *Wagtail Lark* is the female of either this or the next species. In a very interesting paper on the birds of Corfu, &c. (*Ann. Mag. N. H.* 1843, p. 416), it is stated that the Yellow Wagtail of that part differs from the English one, in having the head in the breeding season of a jet-black, at other times of a lead-colour. This black-headed species is common in Afghanistan ; and it would seem also to be that found generally in peninsular India, and in the west ; but never in Lower Bengal, that I am aware of. Having no specimens, I cannot point out any difference that its hyemal garb may exhibit from that of the next species.

*B. flava* (? Lin.) : *Motacilla bistrigata*, Raffles ; perhaps *B. beema*, Sykes ; *B. cinereocapilla* (?), of southern Europe ; *B. neglecta* (?), Gould. Several species of *Budytes* are puzzling in the extreme, from their general similarity combined with the variation to which each is subject. Mr. Gould first distinguished the common British species from that equally common on the European continent, both of which had been confounded under *B. flava*, (Lin.) ; as he likewise did the British and continental Pied Wagtails, that had been confounded under *Mot. alba* ; and the respective Rock Pipits which had been alike classed as *Anthus aquaticus*.† It is very curious and remarkable that, in each of these instances, the common British species is extremely rare (even if they have all been yet *noticed*,) in the neighbouring continental countries, and *vice versa*. Fortunately, the Society now possesses fine specimens of each of the six, which enables me the better to form an opinion respecting their Indian equally near affines.‡ In the common British *Budytes*, now *B. Raii*, Pr. Bonap., particularly in summer

\* Mr. Jerdon now considers these to be the same, vide *Madr. Journ.* No. xxxi, 132.

† The American species figured under this name in the *Fauna Americana-borealis*, is distinct again, being the *A. ludovicianus*, Bonap.

‡ Since writing the above, I have come to the conclusion that two Norwegian specimens sent as *A. obscurus*, are neither that species nor *A. aquaticus* ; but merely dark specimens of *A. pratensis* in summer dress, shot late in the season.

dress, the male has the whole head bright yellowish, very yellow in some towards the forehead, and there is constantly a bright yellow supercilium. In *B. flava*, (Lin.), v. *neglecta*, Gould, the common species of northern Europe, the head is of a dull ash-colour, with—it is said invariably\*—a white supercilium; though this is so little developed in one of two Norwegian specimens before me, that I cannot but question its alleged permanency. In the Indian *B. bistrigata*, again, (which Mr. Strickland identifies with *cinereocapilla* of southern Europe,) the fully mature male in breeding plumage has the head and nape fine dark ashy, with no trace of supercilium; the ear-coverts darker; and throat (or rather chin) white, spreading laterally to contrast with the dark ear-coverts: a specimen so coloured is mentioned in Mr. Jerdon's notice of his *B. melanocephala*, and supposed by him to be probably the female of that bird; but younger specimens exhibit a white supercilium in every degree of development, and many of these certainly cannot be distinguished from the European *flava*; which, after all, I suspect will prove to be the very same. Indeed, the note would seem to be quite similar, being, in both, weaker and less articulate than in *B. Raii*; and it is more common to see these birds about watery places than is the case with the British species.† But whatever its true name, the subject of the present notice is one of the commonest of Bengal birds, frequenting the open country in straggling flocks during the cold season, and disappearing as they assume the nuptial dress. On the Calcutta maidan, where a large herd of cattle are generally grazing, regardless of the hottest sun (which is a remarkable trait of *Bos indicus*), each one will commonly have its attendant *Budytes* keeping to the shadow of the beast's foot, watching for the insects which it rouses from the grass at every step.

*Anthus*, Bechstein: comprising *Corydalla*, Vigors, and *Agrodoma*, Swainson. If any subdivisions could be admitted in this natural (and very difficult) group, the Tree Pipits would appear to have the best claim to be separated from the rest: the form to which the names *Corydalla* and *Agrodoma* have been applied, serving to connect the

\* "The grey-headed birds without a white supercilium are never found in the north of Europe." Strickland, *Ann. Mag. N. H.*, 1844, note to p. 115.

† The plumage of the females of *B. bistrigata* is very much yellower, and more approaching that of the males, than in *B. Raii*.

Tree Pipits with those allied to *A. pratensis*, *obscurus*, &c. ; though where to trace the line of separation, at all satisfactorily, seems quite impossible, albeit Mr. Swainson has classed his *Anthus* and *Agrodoma* in distinct and widely separated natural families. The Tree Pipits (to which, if it be thought necessary to separate them, the name *Dendronanthus* may be applied), are distinguished by shorter tarsi, a less elongated and more curved hind-claw, and a comparatively short and less slender bill than in many others : they resort to open woodlands, and perch often ; and their gait and general manners are different from those of other Pipits (as may be well observed by keeping them in confinement). Their actions are more deliberate, and they have not the habitual rapid run of other Pipits and Wagtails ; neither, in captivity, are they at all peckish and quarrelsome disposed towards their companions, as is eminently the case with the *Motacilla* and *Budytes* genera, and with the Rock and Meadow Pipit of England and the species allied to them. I might point out other differences of the kind, the *ensemble* of which imparts a very distinct subgeneric character to the Tree Pipits ; but such distinctions are not to be recognised in the dry skins with which the systematist is compelled principally to deal : and I shall proceed to range all the Indian species in *Anthus* proper, commencing with the arboreal Pipits, of which I think two species are before me.\*

1. *A. trivialis*, (L.) : *A. arboreus*, Bechstein. This species, the most migratory of the European Pipits, (or a near affine to it,) abounds in Lower Bengal during the cold season, and, it would seem, in suitable localities throughout the country : frequenting groves and gardens, with a disposition to be social, if not gregarious ; and where an extent of thin tree-jungle harbours them in considerable numbers, I have noticed that, towards evening, they commonly fly to and fro over their haunts in scattered parties ; now perhaps two or three, then several, and then perchance a solitary bird, each frequently uttering a slight chirp, and often several descending to alight for a while near together on the same tree : this restlessness they will continue to evince till it is getting dark ; and it would scarcely be guessed what bird it was, till one had been brought down. I never heard the species sing in this part of the world : and its (hyemal) dress is different from that with which we are more

\* The Tree Pipits certainly approximate the American genus *Seiurus*.



familiar in Europe; the upper-parts being uniform greenish-olive, with strongly marked dusky streaks on the crown, and slight dark centres to the dorsal feathers; and the breast-spots are very broad and black. A specimen from Nepal exhibits the summer plumage, having the upper-parts much paler and fulvescent, with the dark centres to the feathers considerably more developed; and the breast-spots are less intense and Thrush-like.\*

A specimen shot out of a flock by the river-side, by the memorable battle-field of Palási (Plassey), is perhaps distinct: the bill is larger; the general size above the average of *A. trivialis*; and there is much more of the dusky colour on the dorsal feathers (it being broader on each individual feather); but the plumage is considerably worn and abraded. The following description was taken of it when fresh. Length six inches and a half, by eleven inches; wing three and a half; tail two and three-quarters; bill to gape eleven-sixteenths of an inch; tarse three-quarters; hind-claw five-sixteenths.† Irides dark: bill dusky above, sullied carneous below; feet light brownish-carneous. The *ensemble* of the upper-parts of this specimen differs much from either that of the nuptial or non-breeding dress of ordinary *arboreus*; but I suspect it is merely the former, that had not been cast at the usual moulting period, but retained till the month of February, becoming proportionately abraded.

2. *A. Richardi*, Vieillot. This species must be very common in Lower Bengal, from the number occasionally brought and sold for 'Ortolans' in the Calcutta bazar, especially after the season for *Calandrella brachydactyla* has passed, and even so late as May: but in the few excursions which I have made, I have never chanced to fall in with them at all plentifully. Those I have observed and shot have been chiefly in cultivated land, and they not unfrequently perch on the sun-

\* Since the above was written, Capt. Boys has favoured the Society with a specimen from N. W. India, which I at once recognized as the European Tree Pipit; of which latter a specimen has been received more recently from England. The common Indian bird has the upper-parts very nearly as plain as those of *Seiurus auricapillus*, and of the same hue; the under-parts being equally Thrush-like, but tinged with fulvous. I have kept the European bird in confinement for years, and regularly noticed its vernal and autumnal changes of plumage.—It seems that Mr. Gray has described the ordinary Indian Tree Pipit, in his 'Zoological Miscellany,' as *A. maculatus* et *A. brevirostris*, Hodgson.

† Among the admeasurements of several individuals of the common species, I find one precisely agreeing with the above, and others nearly approximating.

mit of a small tree ; emitting, before they fly, a chirp not unlike a Sparrow's.

These birds vary in size ; the male being generally about seven inches and a half, or seven and five-eighths (sometimes nearly eight inches), long, by twelve to twelve and a half in alar expanse ; closed wing three inches and five-eighths to three and seven-eighths ; and tail three inches to three and a quarter : tarse generally an inch and a quarter, or at most an eighth less ; and long hind-claw commonly about five-eighths, sometimes prolonged to above three-quarters of an inch. Bill dusky above, yellow at base of lower mandible, and duller yellow anteriorly sometimes to near the tip ; legs yellowish-brown, very yellow on the soles ; inside of mouth bright yellow in adults. Younger individuals have the interior of the mouth faintly lutescent carneous ; and the base of the lower mandible much the same.

Such are the common dimensions of this species : but I once obtained a male, so different in appearance from others shot on the same occasion, that I was inclined to regard it as distinct, until examination of an extensive series convinced me of the contrary : the specimen differs most remarkably in its conspicuously shorter tarsi and toes ; the streakiness of its crown is more decided and strongly marked than usual ; and there is less white on its outer tail-feathers, and that more sharply defined. Length seven inches and three quarters by eleven and three-quarters ; wing three and five-eighths ; tail two and seven-eighths ; tarse only an inch ; middle toe without claw not three-quarters ; and hind-toe (minus claw) but half an inch, instead of nine-sixteenths to five-eighths of an inch. The brevity of tarse corresponds with Yarrell's figure of the leg of this species, in 'British Birds,' I, 388 ; but the toes of the latter are more of the ordinary development.

Richard's Pipit occurs in collections from the Himalaya and from Arracan ; but Mr. Jerdon enumerates it as a rarity in the south of India. The *Anth. australis*, Vieillot, if not identical, must be nearly allied, to judge from the description of it on the *Dict. Class.* ; and this is referred to "Australasia," a name of doubtful signification, since some authors confound it with Australia, while others intend by it the great Oriental Archipelago and neighbouring mainland ; for which Austral-Asia is by no means a bad appellation.\*

\* The Society has since received what is doubtless the true *Anth. australis*, from



3. *A. similis* : *Agrodoma similis*, Jerdon, *Madr. Journ.* No. XXVI,

35. This fine species equals the largest specimens of *A. Richardi* in size, but has the shorter tarse of the individual last described, and also a shorter and much more curved hind-claw. It is further readily distinguished by the strong ferruginous tinge of the pale portion of its plumage, as especially the under-parts and margins of all the wing-feathers; and the upper-parts are less streaky than in *A. Richardi*, with a prevailing dusky hue and slight admixture of ashy on the lighter edgings of the dorsal feathers. Tail having its outermost feather dark, obliquely tipped for its terminal third with ruddy-whitish, which extends up the whole narrow outer web; and the penultimate feather is tipped, for about a quarter of an inch only, with the same. Length of wing three inches and seven-eighths; of tail three and one-eighth; tarse an inch; and hind-claw (straight from base to tip) but three-eighths. From southern India; and Lord Arthur Hay lately obtained a specimen in Jummo, in the N. W. Himalaya.

4. *A. montana*, Jerdon, *MS.* : *A. rufescens* apud Jerdon, *Catal.* This also is a strongly marked species, deeply tinged with fulvous, with strongly contrasting broad blackish central streaks to the feathers of the upper-parts. Bill short, and tolerably strong; the tarse short, and hind-claw moderately curved. The tail has its outer feather dull isabella-white for the terminal two-thirds, obliquely separated as usual from the dark base; the penultimate has the terminal third of the same hue; and both, with the antepenultimate, have their extreme tips pure white. Wing three inches and one-eighth; tail two and three-quarters; bill to gape eleven-sixteenths; tarse seven-eighths; and hind-claw (straight from base to tip) half an inch. Inhabits the grassy hills of the Neilgherries, where tolerably common. Mr. Jerdon has occasionally observed it to perch.

5. *A. striolatus*, uobis, *n. s.* Allied in appearance to the last, but distinguished by its longer bill and tarse, straighter hind-claw, and the much purer white of the outer tail-feathers, though these are a little creamy on their exterior webs only. The general cast of colour is also less brightly fulvous, and the dark central streaks are less deep and contrasting; presenting a general difference which is obvious to the eye,

Sydney; and excepting that its toes and claws are still shorter, it agrees most closely with the single specimen above described, shot on the upper Hoogly.

though scarcely expressible in words : a more available distinction consists in the flanks being streakless, whereas in the preceding species they are conspicuously streaked throughout ; and the wing-edgings are also much more albescent. Length of wing three inches and three-eighths ; of tail two and five-eighths ; bill to gape three-quarters ; tarse an inch ; hind-claw half an inch. I obtained a single specimen of this bird from a collection made at Darjeeling ; and Mr. Jerdon has since procured several in the neighbourhood of Nellore, on the Coromandel coast.\*

6. *A. malayensis*, Eyton : *A. agilis* apud Jerdon, *Catal.* ; *A. pallescens* apud Sundevall.† Nearly allied to the last, but distinguished by its smaller size, by the less contrasted streakings of the back, and especially of the head, and by the fewer spots on the breast. In one specimen before me, from Assam, the pectoral spots are so few, that the bird might be mistaken for *A. rufulus*. Length of wing commonly three inches and one-eighth, sometimes less ; of tail two and a quarter ; bill to gape eleven sixteenths of an inch ; tarse an inch ; long hind-claw commonly half an inch. To facilitate comparison, I have given the admeasurement of bill to gape from dry specimens, in which it is less than in the fresh bird. The young have dark upper-parts, each dorsal feather being narrowly margined round with whitish ; coverts and tertiaries the same ; and the breast has many more spots than in the adult. In this dress, the species presents more the appearance of a young Lark, than I have seen in any other Pipit. It is one of the commonest birds of Lower Bengal during the cold season, in all open places ; and a few remain throughout the year : habits, much as in *A. pratensis* ; and song very insignificant, a mere repetition of one note, as often mounting some forty or fifty feet into the air, it descends sailing to the ground in the usual manner of the birds of this genus. It also appears to be very generally diffused throughout India, as well as in the countries eastward of the

\* In Mr. Gray's catalogue of Mr. Hodgson's specimens presented to the British Museum, *A. striolatus*, Bl., is set down as a synonyme of *A. rufescens* ; but it does not appear upon what authority, and the species assuredly does not accord with the descriptions of *A. rufescens*. *A. pelopus*, H., as described in Mr. Gray's appendix to that catalogue, would seem to differ only in its shorter tarse.

† Add *Cichlops ubiquitarius*, Hodgson, Gray, *Zool. Misc.* ; and a wearisome list of other synonymes from the same source are corrected in Mr. Gray's catalogue cited in the preceding note, which I cannot but think it much to be regretted were ever published.

Bay of Bengal, down to the Straits of Malacca; and (as Mr. Eytou remarks) it is probably the Sumatran *Alauda pratensis* apud Raffles.

7. *A. agilis*, Sykes. Until recently, Mr. Jerdon and myself have referred the preceding species to this one; but Mr. Strickland (to whom Mr. Jerdon sent specimens of the former) pronounces them to be distinct, and I am unacquainted with the true *agilis* of the Deccan.

8. *A. rufulus*, Vieillot. Nearly allied to *A. malayensis*, but distinguished by its larger size, much shorter hind-claw, and by the absence, frequently, of any spots on the breast, which, when they occur, are few in number, small and inconspicuous: the dark centres of the dorsal feathers are also obscure, or even obsolete; but a narrow dark central streak to each feather is more or less developed on the crown. Length six inches and three-quarters, by ten and three-quarters; closed wing three inches and a half; tail two and a half: hind-claw seldom exceeding three-eighths of an inch. From the bare stony plains of the central table-land of the peninsula of India; and I recently obtained a few on similar ground near Midnapore.

9. *A. pratensis*, (L.) Mr. Gould has seen specimens of this common British species from Western India, according to Mr. Yarrell, 'British Birds,' I. 392.\*

10. *A. aquaticus* (?), Bechstein: if distinct, *A. roseatus*, Hodgson.† Mr. Hodgson sent this bird under two or three names; but on careful comparison of many, and looking particularly to the growing feathers of moulting birds, I am satisfied of the series being throughout specifically identical. They also accord with my recollection of the European *A. aquaticus* (nec *obscurus* of Britain), respecting which Mr. Gould (as cited by Mr. Yarrell), remarks:—"We have some reason to believe that there are two species of Rock Pipits nearly allied to each other, as we have never been able to find in any of the examples killed in the British Islands that uniform vinous tint we have observed to pervade the breast of continental examples; neither have we been able to meet with any specimens in continental collections, that strictly accord with the dull and indistinct markings of those of the British Islands:" to which I

\* Mr. Gray refers the *A. hortulanus*, Hodgson, *n. s.*, to this species; but the specimens which Mr. H. presented to this Society by the name cited, were decidedly of the Indian type of *A. arboreus*, to which the appellation *hortulanus* is better applicable.

† This Mr. Gray refers to *A. cervinus*; *Motacilla cervina*, Pallas: *A. rufogularis*, Brehm.

may add, (from my own notes,) that the absence of *pure white* on the exterior tail-feathers is a further distinction of the British species, though there is always a pale external and terminal portion. I believe, too, that there is this distinction in their habits, that while the continental species is met with far inland, the British *A. obscurus* keeps almost wholly to the immediate vicinity of the sea; the only instance I have known to the contrary (and I believe none has hitherto been recorded), being that of one taken in a bird-catcher's net near London, which I kept for some two or three years in a cage. Now the Nepal bird conforms to all these indications of *A. aquaticus*, unless it be that the streaking of its upper-parts is too strongly brought out; and it appears that, at one season (probably that of breeding), the lower-parts, to judge from several moulting specimens in different stages of advancement, but none complete, become throughout of a faint vinous-roseate hue, with the pectoral spots much contracted; while, at another season, the rosy tinge wholly disappears, the lower-parts becoming weak fulvescent, with the dark spots much larger and broader. The bend of the wing, and margins of the secondaries, are yellowish green, not unfrequently rather bright, but sometimes this colour is scarcely observable; and the axillaries, and anterior margin of the wing beneath, incline to sulphur-yellow: outermost tail-feather dullish white externally, but tipped, as is also the next, with purer white. Length of wing generally three inches and a half, or an eighth less or more; of tail, commonly two and three-quarters; tarse seven-eighths; and hind-claw generally three-eighths. Inhabits the Himalaya? (Nepal.) A single specimen differs from the rest in having the upper-parts plainer, especially the head, which is scarcely striated; and the pectoral and flank spots are smaller and more contracted than usual: probably the nestling dress, a little abraded.\*

Among what are termed the "Warblers," comparatively few have hitherto found a place in Indian Ornithology, to what the general analogy of other countries would lead us to suppose exist. The genus *Curruca*, so largely developed in Europe, has only three ascertained representatives.

\* Add, as an eleventh Indian species, upon the authority of Mr. Gray's catalogue before referred to, *A. rufescens*, Tem., v. *campestris*, Bechst., v. *Cichlops thermophilus*, Hodgson, Gray's *Zool. Misc.*, p. 33.



1. *C. orphea* apud Jerdon ; nec *orphea* vera, as I have been assured : probably *Black-headed Warbler* of Latham. This Indian species combines the characters of the European *C. atricapilla* and *C. sylviella*, but has a much larger and longer bill than either, which tends a little to be incurved. Length of wing three inches and a quarter, of tail two and three-quarters ; bill to gape three-quarters of an inch ; and tarse seven-eighths. Colour brownish-ashy above, whitish beneath, pure white on the throat and middle of belly ; cap, including lores and upper ear-coverts, black in the male, dusky or blackish-grey in the female ; the nape and rump comparatively pure ashy : tail blackish ; its outermost feather externally white for the basal two-thirds, obliquely separated ; the next four successively less broadly tipped with white : bill dusky, with whitish base to lower mandible ; and feet plumbeous. From southern India. If a new species, *C. Jerdoni*, nobis.

2. *C. affinis*, nobis, XIV, note to p. 564 : *C. cinerea* apud Jerdon, Catal., vide *loc. cit.* Hitherto only observed in southern India.

3. *C. sylviella*, (Gm.): *C. garrula*, Brisson, and of Sykes and Jerdon. Since writing the note referred to in the preceding notice, I have not only received *C. sylviella* from Mr. Jerdon, entirely agreeing with British specimens, but have myself shot a pair, about a hundred miles above Calcutta. I observed many of them frequenting the baubul *Mimosæ*, in little parties ; and, as in England, keeping chiefly to the trees, and not to low bush-covert, as is the habit of *C. sylvia* (*v. cinerea*).

M. Temminck mentions having received a female of *C. atricapilla*, the melodious British Blackcap, from Java ; in which case it would probably be also an Indian bird : and I am very greatly mistaken if I did not, upon one occasion, observe *C. hortensis*, another charming British songster, in this neighbourhood, both seeing the bird, as far as I could make it out among the foliage, and recognising its familiar notes ; though having my gun loaded with heavy shot, and being upon the look out for more redoubtable game, I did not secure the specimen.

*Calamoherpe*, Boie. Three species of this genus are noticed in XIV, 594-5, and one of them again in XV, 288. In *Madr. Journ.* No XXXI, 130, Mr. Jerdon, following Mr. Strickland, identifies *C. montana* with the British *C. salicaria*. This is a mistake, unless Mr. Jerdon has confounded two species under *montana*, which is improbable. More

recently, he has favoured me with his *montana* of southern India, which is identical with the Bengal species. I have pointed out the distinctions, *loc. cit.*; and may add that the songs of the two species are altogether different, that of *C. montana* being a low soft warble.\* *C. montana* is probably the *Sylvia arundinacea*, var. A, of Latham.

*Phyllopneuste*, vide XIV, 593. Mr. Jerdon has sent me two very closely allied races which he thinks have been confounded under *Ph. rama*. The one he regards as true *rama*, which is of a more rufescent brown colour; the other has a more greyish shade. I can hardly, however, bring myself to admit their distinctness. The latter variety occurs abundantly in Lower Bengal, upon the sandy soil above the tide-way of the Hoogly, haunting baubul topes and scattered trees near villages, as well as hedges and low bush-jungle; and I have recently observed it in the jungles north and west of Midnapore. The following are my notes, taken from several recent specimens. Length five inches, by seven and a half in alar expanse; wing two inches and three-eighths, to two and a half; tail two inches to two and one-eighth, its outermost feather an eighth of an inch shorter: bill to gape five-eighths of an inch; tarse three-quarters. Irides dark: bill dusky above, pale carneous below: inside of mouth yellow: legs light brown, tinged with plumbeous on the joints. Length of first primary, five-eighths of an inch and upwards. Colour above greyish-brown, below pale, passing to white at the vent and on the lower tail-coverts; lores, continued as a streak passing the eye, pale.

*Culicipeta*, nobis, XII, 968. I obtained a very beautiful species of this genus a few miles above Calcutta.

*C. cantator*, (Tickell,) *J. A. S.* II, 576.† Length four inches and a quarter, by six and three-eighths in alar expanse; wing two inches and a quarter; and tail an inch and three-quarters: bill to gape nearly

\* Mr. Jerdon has also sent a British specimen of *C. salicaria*, which certainly approximates to *montana* more than two others in the Society's collection do; these three being unquestionably of the same species: all, however, are of a more rufescent and less greenish shade than *C. montana*; the bill of *C. salicaria* is narrower; and, as above remarked, the notes of the two species are exceedingly unlike, which, I think, of itself decides the question. Mr. Jerdon suggests that *C. agricola* may perhaps be the *C. palustris* of Europe.

† *C. schisticeps* of Mr. Gray's catalogue of Mr. Hodgson's specimens presented to the British Museum, pp. 67, 153.



five-eighths; and tarse five-eighths of an inch. Bill light dusky above, amber-coloured below; legs light yellowish-carneous, with a leaden tinge: bill narrower than in *C. Burkii*; and the rictal setæ are less developed; the claws, especially that of the hind-toe, being shorter. Colour, a lively yellowish-green above, bright yellow on the throat, cheek, supercilium, lower tail-coverts, and edge of the wing above the insertion of the quills: the great alars are also margined externally with greenish-yellow, and the tail more especially towards its base: greater wing-coverts tipped with pale yellow, forming a bar on the wing: the entire abdomen and flanks greyish-white: on each side of the crown a broad black longitudinal band, divided by a yellowish-green mesial one: upper secondaries very slightly margined at the tips with yellowish-white; and the tail-feathers having a narrow yellowish-white internal border. Shot near Calcutta.

*C. poliogenys*, nobis, *n. s.* This is nearly allied to *Abrornis schisticeps*, Hodgson, (XIV, 592,) from which it differs in having the cheeks and ear-coverts, with the feathers commencing from the base of the lower mandible, of the same ash-grey colour as the head, and the throat greyish white, instead of these parts being bright yellow, as in *C. schisticeps*. There is also a conspicuous whitish-yellow wing-band, of which the latter species presents no trace whatever. From Darjeeling.

It is exceedingly difficult to arrange the great series of the birds of this group at all satisfactorily; and I fear that we shall have eventually to adopt many divisions among them. Of the various species allied in colouring and markings to *Culicipeta Burkii*, that bird stands alone in several particulars, as the more decided fly-catching form of bill, and accompanying development of the rictal setæ; also the longer and more slender, though equally curved, claws. Although the species upon which the division was originally founded, I regard it as an aberrant member of its genus, though Mr. Hodgson would separate from it the others by the name *Abrornis*, XIV, 592. Retaining, however, the name *Culicipeta* for the series, I think we must refer to it—2, *C. schisticeps*,\* (Hodg., *loc. cit.*) 3, *C. poliogenys*,—4, *C. cantator*,

\* This is *Phyllopneuste xanthoschistos*, Hodgson, of Gray's catalogue; and *Culicipeta schisticeps* of the same is *C. cantator*, (Tickell). *Abrornis chloronotus*, Hodg., Gray, so far as I could judge from a sadly injured specimen, did not appear to me to differ from *Reguloides modestus*, (Gould,) except in being rather brighter than usual.

—5, *C. pulchra*, (Hodg., *ibid.*),—6, *C. castaniceps*, (Hodg., *ibid.*)—7, *C. trochiloides* (*Acanthiza trochiloides*, Sundevall, v. *Ph. reguloides*, nobis, XI, 191, and XII, 963),—and 8, *C. occipitalis*, (Jerdon, XIV, 593), formerly referred by me to *Phyllopneuste*.\*

As another aberrant member of the same group, but which can scarcely range in the same minimum division with *C. Burkii*, though barely separable from *C. trochiloides* in a subgeneric sense, we have the *Regulus modestus*, Gould, a form which, if *Abrornis* be detached from *Culicipeta*, would equally require to be separated, and might range as the type of a distinct subdivision—*Reguloides*, nobis.

Then, of *Phyllopneuste* may be recognised two marked subdivisions; that with the green plumage, typified by *Ph. hippolais* of Europe and *Ph. indica*: and that with brown plumage, exemplified by *Ph. rama*: the former being allied to the green species of *Phylloscopus*; the latter to those with brown plumage, as *Ph. fuscatus* and its immediate allies.

Also, of *Phylloscopus*, should perhaps be distinguished the bright green species with long wings, such as *Ph. sibilatrix* and *Ph. nitidus*; and the numerous species of the type of *Ph. trochilus* and *Ph. rufus* of Europe, of which I have already described—*Ph. javanicus*, (Horsf. v. *magnirostris*, nobis,) *Ph. viridanus*, *Ph. lugubris*, *Ph. tristis*, *Ph. brunneus*, and *Ph. fuscatus*; probably also the *Ph. affinis*, (Tickell), to which Mr. Jerdon refers his *Sylvia indica*.

The last appears to be a bird which I long regarded as the young (in the yellow dress) of *Ph. lugubris*; and which Mr. Jerdon thinks is his *Ph. indicus*, but wishes to see a recent specimen before he quite decides that it is so. That it is distinct from *Ph. lugubris*, I am now satisfied; and must not omit to state that Prof. Behn, of Kiel University, first pointed out to me the specific distinctions of the two, when we had fresh specimens of each before us, in the course of a fortnight's trip which I had the pleasure of taking with him and M. Kielrøup, both of the scientific corps attached to the Danish frigate *Galatea*, in quest of specimens of all kinds on the banks of the Hoogly and their vicinity. The following are the distinctions which I noted down at that time. The bill is more feeble, and much more compressed, in *Ph. affinis*; while in *Ph. lugubris* it is very little compressed, approaching to the *Culicipeta* (*i. e.* *Abrornis*) form, and the rictal setæ are

\* To the synonymes already given of *C. Burkii*, add *Acanthiza arrogans*, Sundevall.

considerably more developed. The colour of the legs is also very different, being in *lugubris* pale greenish-dusky, while in *affinis* there is a strong tinge of brown. I have obtained numerous specimens of this bird, all of which were of the same dusky-green colour above, with dull yellow supercilium and lower-parts, brightening on the middle of the belly; and I have reason to believe that this colouring is permanent—unlike the yellow dress of the British *Ph. trochilus* and *Ph. rufus*, which is not their nestling garb, but is put forth very soon after leaving the nest. *Ph. affinis* measures four inches and three-eighths to four and three-quarters long, by six and a half to seven inches in expanse; wing two inches and one-eighth, to two and three-eighths; and tail an inch and three-quarters to one and seven-eighths: bill to gape half an inch, or a trifle more; tarse three-quarters of an inch, or nearly so. Irides dark. Bill dusky above, amber-coloured below; interior of the mouth bright yellow; and legs pale brownish-dusky, tinged with yellow; the soles more or less yellowish.

Another and larger species was obtained on the same occasion, with very similar colouring.

*Ph. griseolus*, nobis, *n. s.* Length five inches and a quarter, by seven and a quarter; wing two and five-eighths; tail two and a quarter; bill to gape nine-sixteenths; tarse three quarters of an inch. Irides very dark brown; bill dusky above, below pale amber; interior of the mouth whitish, with scarcely a tinge of yellow; tarse externally, and the toes above, light brown, internally and beneath yellow. This bird is distinguished from *Ph. affinis* by its much larger size, and by the decided ashy tinge of its upper-parts; also by the colour of the legs in the recent specimen, and whitish interior of the mouth. The yellow of the under-parts is more confined to the central region, and a somewhat ruddy whitish prevails, instead of yellow, on the ear-coverts. Some specimens of *Ph. fuscatus* are so similar, except in wanting the yellow, that I should have been tempted to regard them as different phases of plumage of the same species, analogous to those exhibited by *Ph. trochilus* and *Ph. rufus*, were it not for the different proportions of the first primaries, besides that the wing is longer in *Ph. griseolus* than in any specimen of *fuscatus* yet examined. In the latter, the first primary is fully half the length of the second; while in the former it does not exceed one-third of the length of the second: measuring from the

tip of the short first primary to that of the wing, *Ph. fuscatus* gives but an inch (in four specimens under examination), while *Ph. griseolus* gives an inch and a half.

It would seem that *Ph. fuscatus* undergoes a certain seasonal change of colouring: the whole plumage being less olivaceous, and more of a fuscous-ashy above, with a faint ruddy tinge on the supercilium, car-coverts, and slightly on the under-parts, and the bill and feet being darker, in a specimen shot late in April, than is observable in others killed during the cold weather.\* Perhaps, however, the former may be merely a very bright old bird, and it is to this specimen in particular that *Ph. griseolus* shows a marked approximation: but the difference in the length of their first primaries betokens their distinctness; and the latter has also the wing fully a quarter of an inch longer than in the other.

*Regulus cristatus*, Ray. This species visits Simla, and a fine specimen procured near that station has been obligingly presented to the Society by Capt. Thomas. It is quite undistinguishable from the British bird; and the genus has not heretofore been recorded as Himalayan.

*Ægithalus flammiceps*, Burton, *P. Z. S.* 1835, p. 153. In XIII, 379, I suggested that this might probably turn out to be a *Stachyris*, Hodgson: but I have lately obtained a specimen, and consider it to be rightly classified. The *Dicaeum sanguinifrons* of Lord Arthur Hay, XV, 44, refers evidently to this bird: but the affinities of the genus do not seem to be with *Dicaeum*, and indeed are at present very obscure. I certainly do not think that *Ægithalus* approximates *Parus*, near which it has been currently arranged; nor do I know of any Old World form that much resembles it.

*Parus*, Lin. A synopsis of the Indian species of this group was attempted in XIII, 942; and a new species from the eastern ghats of the peninsula described in XIV, 553. I have now to add three others, two of which have been overlooked hitherto from their similarity to allied species.

*P. aplonotus*, nobis: *P. xanthogenys* apud nos, XI, 59, and probably

\* Another, recently obtained (March 17), resembles that above described; and the difference from *Ph. fuscatus* is so marked, that I cannot help here also suspecting a distinctness of species.

of Jerdon. This differs from true *P. xanthogenys* of the Himalaya in various details of its markings : as in having the back plain dull yellowish olive-green, without the broad black lateral margins to each feather, conspicuous in the Himalayan species ; in having the yellow colouring reduced in quantity, and also less vivid, the posterior crest-feathers being but slightly tipped with yellow ; the broad and well marked yellow supercilium is diminished to an elongated spot posterior only to the eye, there being no yellow above the eye ; and the loreal feathers, instead of being wholly yellow, are black with slight yellowish tips : the black band posterior to the eye is much broader ; and the black throat and front of the neck very much broader, comprehending the feathers about the gape, which are yellow in the other species : the white tips to the tail-feathers are also much more developed : and, lastly, without descending to more minute particulars, the tertiaries are laterally edged throughout with white, whereas in *P. xanthogenys* there is only a trace of this towards their base. The general resemblance, however, between these two species is very great : but *P. xanthogenys* is at once distinguished by the variegation of its back ; and when the two are seen together, by the much greater quantity of yellow on the sides of the head and neck : while in *P. aplonotus* the black throat is conspicuously much broader, and there is a greater proportion of white on the wings and tail. *P. aplonotus* inhabits the mountains of central India ; and there is little doubt of its being Mr. Jerdon's more southern bird referred to *P. xanthogenys*.

*P. Griffithii*, nobis. This species is founded on a drawing of a bird obtained by the late Dr. Griffith, between Assam and Ava. With a near affinity in colouring to *P. xanthogenys* and *P. aplonotus*, it is at once distinguished by being crestless, and by the details of its markings. Length of wing about two inches and three-quarters, and of tail two inches and a quarter. Colour black, with the lores and sides of neck, the rump, under-parts, an occipital spot, and triangular terminal drops on the dorsal feathers, yellow ; throat and fore-neck black : tail considerably forked, and tipped with white ; also the greater wing-coverts and the tertiaries, with the base and edge of the primaries.

*P. rubdiventris*, nobis : *P. melanolophos* apud Hodgson. Here, again, two nearly allied species have been confounded together, from their general resemblance : the true *P. melanolophos* inhabiting the



N. W. Himalaya, as about Simla; and the present species, Nepal and Sikkim. Size about the same, but the bill of *P. melanolophos* is conspicuously more slender: the latter has also the back, and the belly, pure dark grey; the black of the throat and breast carried further down; a ferruginous patch confined to each side of the breast, below the black; and the greater and lesser wing-coverts are tipped with rufescent-white, forming two bars on the wing.—*P. rubidiventris*, on the other hand, has the upper-parts of a paler and rufescent grey, with a strong tinge of ferruginous upon the rump; no trace of bars on the wing; the black of the throat less developed, this being bordered with the same grey as the back; and the whole of the abdominal region is tinged with dilute ferruginous.

*P. atriceps*, Horsfield, will bear the prior name *cinereus* of Vieillot, founded on one of Levaillant's figures. It is the *P. major*, var. B, of Latham.\* In my description of *Sylviparus modestus*, Burton, XIII, 942, I omitted to notice the spot of silky-yellow feathers above the eye, upon which Mr. Hodgson founds his name *seriophrys* (or *sericophrys* would have been better); neither has Mr. Burton noticed it. This is very conspicuous, however, in the recent specimen (as I have been informed); but was completely hidden in the dry skin from which I drew up the notice adverted to.

*Paradoxornis* group, XIV, 578. To this should probably be referred the Australian genus *Struthidea*. Of *Heteromorpha ruficeps*, Capt. Tickell writes me word—"I have killed several of these birds, and watched them in their wild state, at Geeng, near Darjeeling; and I cannot agree in opinion with those who would class its group among the *Crateropodines*. This bird is a great devourer of grain (maize, rice, and buckwheat, which last is common about Nepal). It perches on the tops of high trees, as well as bushes, when off its feed; and in fact shows nothing in its manners of the thicket-loving, skulking, habits of the *Crateropodines*."

Of the vast series of birds comprised in, or allied to, the last named, many subgroups will require to be distinguished. Just upon the confines of the series, we have the *Leiotrichanæ*, comprising *Cutia*, *Pteruthius*, *Leiothrix* and its subgenera, *Ixulus*, *Yuhina*, and even *Myzornis*. Then another minor series, comprising *Sibia*, *Leioptila*, *Ixops*, *Actino-*

\* The Society has lately received a specimen of this bird from Ceylon.



*dura*, *Garrulax* (perhaps further separable, especially the form of *G. striatus* and *G. imbricatus*), *Crateropus* of Africa, *Psophodes* and *Sphe-nostoma* of Australia, and finally *Turnagra* of Lesson (v. *Keropia*, G. R. Gray), to which the *Garrulus striatus* of Vigors has been referred. Another little section consists of *Pomatorhinus* and *Xiphorhamphus*, nobis, to the former of which true *Timalia* is nearly allied. Another of *Menura*, *Pteroptochus*, and *Scytalopus*. Another long subseries, of *Cinclosoma*, *Circolorhamphus*, *Megalurus*, *Gampsorhynchus*, *Arundinax*, *Sphenura*, *Sphenæacus*, *Schænicola*, *Laticilla*, *Amytis*, *Stipiturus*, *Malurus*, *Atrichea*, *Hylacola*, *Praticola* (v. *Calamanthus*), *Pellornium*, *Malacocercus*, *Drymoica*, *Cisticola*, *Prinia*, and *Orthotomus*; and scarcely separable would be *Timalia*, *Mixornis*, *Chrysomma*, *Macronous*, *Turdinus*, *Malacopteron*, *Alcippe*, *Setaria*, *Erpornis* (?), and *Stachyris*. How all these are to be finally disposed of, each according to its proper affinities, is a problem to our best ornithologists just now; and those who have most studied the series, will not, I believe, be the most eager to offer an opinion. It is easy enough to cut the Gordian knot, by carrying out the principle of ranging all the large species in *Merulidæ*, and all the small in *Sylviadæ*, and thus manufacturing duplex series, presenting “beautiful analogies” and “representations” one of the other; but the time has a little gone by for such frivolities, and ornithologists must pursue the course adopted by students of other branches of Natural History,—must study structure, internal as well as external, and learn to regard habit as altogether subordinate, inasmuch as species may be framed on any particular subtype of organization, however subordinate, and be modified upon that subtype in adaptation to any special mode of life,—and this too, without reference to each other, beyond the fortuitous one of their presenting similar modifications, which are thus *analogous* merely, or by no means indicative of *affinity*, i. e. of that intrinsic relationship upon which all legitimate classification must be founded. But I pass to add a few new species, and remarks on old species, to some of the genera that have been enumerated; having upon former occasions treated of the several Indian genera among them: and this having done, shall bid adieu to the Insessorial tribes for a while, till fresh novelties among them begin again to accumulate.

*Leiotrichanæ.* (Treated of in XIII, 934 et seq., and XIV, 552).

The *Siva nipalensis*, Hodgson, should, I now think, be referred to *Alcippe*, nobis, being closely allied to *A. sepiaria*, (Horsfield); and I doubt whether *A. Phayrei*, nobis, XIV, 601, is other than an individual variety of *S. nipalensis*, in which the blackish nuchal streaks are wanting. *S. nipalensis*, with the nuchal streaks, is not uncommon in Arracan. I also now think it better to class my *Siva occipitalis*, XIV, 553, with *Ixulus flavicollis*, Hodgson; modifying the diagnosis of *Ixulus* so as to comprise both species, for they are undoubtedly very closely allied, notwithstanding the considerable difference in form of bill. Of the genus *Pteruthius*, Mr. Hodgson has sent the following descriptions of what are considered by him to be two new species.

*Pt. zanthochloris*, H. (*Non vidi.*) "Above vernal-green, below bright yellow. Cap slaty-blue. Throat white: alars and caudals internally dark, the latter tipped with yellow, and albescent marginally on the sides. Iris dark brown. Legs fleshy-white. Bill plumbeous. Structure typical. Size small. Sexes alike? Length five inches; bill seven-sixteenths; tail under two inches; wing two and a quarter in some, nearly two and a half in other specimens; tarse thirteen-sixteenths; central toe and nail nine-sixteenths; hind seven-sixteenths."

*Pt. melanotis*, H. (*Non vidi.*) "Structure typical. Closely allied in size and otherwise to the preceding species. Length four inches and a half; extent six and a half. Bill half an inch. Tail an inch and six-tenths; tarse eight-tenths. Central toe and nail plus half an inch. Hind under half an inch. Above vernal-green, below bright yellow. Throat bright chesnut. Nape slaty. Ears half golden, half black. Wing-coverts black with white tips. Bill dark slaty. Legs fleshy. Tail nearly even, and paled to the sides." The habitat of both these (alleged) species would appear to be the region of the Terai, at the base of the S. E. Himalaya. I cannot, however, help suspecting that the latter is merely the adult male of the former.

*Proparus chrysotis* (*chrysopterus*?), Hodgson, XIII, 938.\* Fine specimens of this bird, from Darjeeling, are now before me, in much better order than that formerly sent by Mr. Hodgson. They have the upper-parts fine olive-green, which fades to ashy by exposure to the

\* The name *chrysotis* must have arisen from a slip of the pen on the part of Mr. H., probably for *chrysopterus*, or perhaps *leucotis*, as the former is inapplicable to the species. It had better stand as *Pr. leucotis*.

light; crown nigrescent, and throat dark silvery-ash; the ear-coverts whitish silvery-ash. The male has the whole under-parts, below the throat and fore-neck, bright yellow, the first five primaries edged with the same; the secondaries and basal two-thirds of all but the middle pair of rectrices are margined with orange-yellow; the tertiaries internally with dull white, and most of the great alars have a small white spot at tip. In the females, the lower-parts are merely tinged with yellow, and that of the wings and tail is comparatively very faint.

*Minla cinerea*, nobis, *n. s.* Allied in form and size to *M. castaniceps*, XIII, 939. Colour olive-grey above, tinged with green; beneath white, tinged on the flanks with ashy, and shewing some yellow along the middle of the abdomen: a broad yellowish-white supercilium, and over this a black one; the coronal feathers margined with black, and the cheeks mingled black and white; orbital feathers subdued white; wings and tail without markings; the tertiaries edged with grey, and the secondaries with very faint dull yellowish. Length four inches and a half, of wing two and a quarter, and tail an inch and three-quarters; bill to gape nearly five-eighths; and tarse three-quarters of an inch. Probably a female bird. From Darjeeling.

In XIV, 600, at the suggestion of Mr. Strickland, I regarded as identical the *Hypsipetes gracilis*, McClelland and Horsfield, with *Sibia capistrata*, (Vig.), *v. nigriceps*, Hodgson; but referring since to Dr. McClelland's drawing of *Sibia gracilis*, and more particularly also to the latin diagnosis (*P. Z. S.* 1839, p. 159), I find that they are decidedly distinct. The following description is taken from the drawing of *S. gracilis*. Above dark non-rufous brown, paler below, and the throat white; rump and upper tail-coverts ashy; tail also greyish, with a broad black subterminal band, and broad greyish-white tips; wings dusky-black, the great coverts partly, and the tertiaries wholly, greyish-white, the latter having a slight dusky subterminal border and white extreme edge. Iris whitish. Bill dusky-black; and legs dull white. Wing three inches and a half: tail about four inches. Inhabits Assam.

*Leioptila*, nobis, *n. g.* This form serves to connect *Sibia*, Hodg., as exemplified by *S. capistrata*, with *Yuhina*, Hodg.; but cannot be placed satisfactorily with either. It also much approaches *Ixops*, Hodg., in general structure, but the legs and toes are much smaller. The bill, too, is more slender, less so than in *Yuhina*, rather more so than in

*Sibia* ; but it incurves less than in *Sibia*, and has the tip of its upper mandible slightly bent over, and emarginated feebly ; the upper ridge being more obtusely angulated than in the others : nostrils somewhat large, the orifice reduced to a fissure by the overlapping membrane : rictal bristles fine and inconspicuous. Wings rather short, and rounded ; having the first primary but half the length of the third, and the fourth and fifth longest : the tertiaries broad, and almost truncate. Tail somewhat long, having its three medial pairs of feathers equal, the rest graduating. Legs too much destroyed in the only specimen examined, to permit of description.

*L. annectans*, nobis. Length about seven inches and a quarter, of wing three and an eighth, and tail three and a half, its outermost feathers an inch less ; bill to gape three-quarters of an inch, and tarse seven-eighths. Colour of the back, rump, and upper tail-coverts, bright rufo-ferruginous (much as in the male *Cutia nipalensis*) ; the great range of wing-coverts broadly tipped, and the tertiaries edged externally towards their base, with the same : scapularies, flanks, and lower tail-coverts, weaker ferruginous, and a trace of the same at the setting on of the neck : throat and breast pure white ; the head, neck, and ear-coverts, black, mingled with brownish upon the crown, and streaked on the nape with white : wings and tail black, the caudal feathers white-tipped, and successively more deeply so to the outermost ; the primaries and secondaries edged externally with ash-grey, and the tertiaries bordered with white round their broad tips. Bill black, with the base of the lower mandible yellow ; and the legs pale. From Darjeeling.

*Garrulax*, Lesson. To the synopsis of this genus in XIV, 598 *et seq.*, I have only further to add, that Mr. Jerdon has favored me with a copy of Buffon's figure, in the *Planches Coloriées*, upon which was founded *G. perspicillatus*, (Gm.) ; and this confirms me in my opinion that the species is alike distinct from *G. Belangeri* and *G. leucolophos*, though nearly allied to both, and forming with them a particular subsection. Of *G. Belangeri*, the Society has been recently favoured by Mr. Barbe with many specimens from the Tenasserim Province of Yé,\* all exactly agreeing in their distinctions from *G. leucolophos* of the Himalaya, Assam, Sylhet, and Arracan : and also with specimens of *G. pectoralis* from the same part, remarkable for the very slight develop-

\* Also with others from the vicinity of Amherst, forwarded by E. O'Riley, Esq.

ment of the black pectoral band, which in one is indeed wanting altogether, though on minute inspection a black dash may here and there be seen upon a few of the feathers that should constitute the band in question, and which band is particularly well developed in some Arracanese specimens. The *G. McClellandii*, nobis, judging from Dr. McClelland's figure of it, is probably a variety only of *G. moniliger*.

*Pomatorhinus*, Horsfield. A synopsis of this genus was attempted in XIII, 946; to which I should have added *P. Isidorei*, Lesson, from New Guinea, described in the *Dict. Class.* The form of the wing is, however, so different in the Australian species, that (as long ago suggested by Messrs. Jardine and Selby, in their 'Illustrations of Ornithology,' it is probable that they will have eventually to be separated. Two other additional species are described in XIV, 597; and I have now to add

*P. olivaceus*, nobis, *n. s.*: probably (rather than *P. schisticeps*) the *P. montanus* apud McClelland and Horsfield, *P. Z. S.* 1839, p. 166. Allied to *P. schisticeps*, *P. Horsfieldi*, and *P. montanus*. Size of the two last, with bill of intermediate length. Colour of the same uniform dull olive-green above as in *P. schisticeps*, with a faint rufescent tinge on the nape; head of the same olive-colour as the back: throat, breast, and middle of the belly, together with a long superciliary streak, pure white; beneath the latter, the lores and ear-coverts are black, and beyond the ear-coverts there is ferruginous spot on the side of the neck, continued as a slight border to the white breast: flanks and lower tail-coverts olivaceous. Bill yellow, the upper mandible dusky above at base; and feet leaden-brown. Length under nine inches; the wing and middle tail-feathers respectively three and seven-eighths; bill to gape an inch and a quarter; and tarse the same. From the Tenasserim Province of Yé, whence sent by Mr. Barbe. Dr. McClelland's figure of his *P. montanus*, from Assam, seems to agree with this; but may prove upon examination to be distinct, in which case it might stand as *P. assamensis*, McClelland, *MS.* From bill to forehead the drawing measures an inch, wing three inches and a half, and tail about three and three-quarters.

*P. melanurus*, nobis, *n. s.* Resembles *P. Horsfieldi*, but seems always to have a shorter bill, and the colours are more brought out: the hue of the upper-parts is more rufescent, the tail much blacker, and the



cap is suffused with blackish, mingled with rufescent, but contrasting with the rufescent hue of the rest of the upper-parts. The black of the tail affords the readiest distinction. Inhabits Ceylon.

*P. rubiginosus*, nobis, XIV, 597. All the specimens of this bird which I have hitherto seen, from Darjeeling, correspond with my description of the supposed male; having the cap black, and some erect lengthened plumes above the lores of the same deep rufous as the breast: but the Arracan specimens, three in number, which I have now seen, alike correspond with my description of the supposed female; having the crown of the same olivaceous hue as the rest of the upper-parts, this being of a greener tinge than in the Darjeeling birds; the feathers above the lores short and white, like the rest of the supercilium; and the rufous of the under-parts is much weaker and more fulvescent. Hence, I now suspect that they are two distinct species, and shall designate that of Arracan *P. Phayrei*.

*Gampсорhynchus rufulus*, nobis (XIII, 371, XIV, 596). Mr. Hodgson has sent a description of this curious species, from which may be cited—"Irides straw: bill sordid brown; legs sordid fleshy-grey. Expanse of wings eleven inches and a quarter." I have also seen several more specimens, nearly all of which had a greater or less intermixture of whitish feathers (as described).

*Mixornis chloris*, Hodgson, XI, 794, XIII, 380 (*Motacilla rubicapilla* (?), Tickell). This has since been described by Mr. Hodgson as *M. ruficeps*, H., *P. Z. S.* 1845, p. 23.\*

*Stachyris ruficeps*, nobis, *n. s.* Allied in form and size to *St. pyrrhops*, Hodgson, XIII, 379; but having the crown light ferruginous, and the chin and middle of the throat white, with slight black central streaks to the feathers: rest of the upper-parts plain olive, and of the lower whitish, with a fulvous tinge on the sides of the neck and breast. Length of wing two inches and an eighth, and of tail an inch. From Darjeeling.

In XIII, 370, I remarked the near affinity of *Timalia hyperythra*, Franklin, for the *Malacocerci*; an opinion fully borne out by subsequent observation of the habits of the species in its native jungles: but I find

\* And in Mr. Gray's list of Mr. Hodgson's specimens presented to the British Museum, it is identified with *Timalia gularis*, Horsfield; though I question upon sufficient grounds, however closely allied.



that *T. hyperythra* of Jerdon's list, inhabiting southern India and Ceylon, differs from true *hyperythra*, which I obtained in the Midnapore jungles, in having the chin and throat white, and the ferruginous hue of the rest of the under-parts rather deeper. The length of recent specimens was five inches and a half, by six and a half in alar expanse; closed wing two inches, to two and an eighth: iris brown; bill pale, darker above; and legs caraneous. This bird occurred in flocks, and its note considerably resembles that of *Malacocercus caudatus*, except in being proportionally weaker. Should it be considered separable, as a species, from its representative in southern India, the latter might stand as *M. (?) albogularis*, nobis. The difference is, indeed, somewhat like that between *Geocichla citrina* and *G. cyanotus*.

Of the more typical species of *Malacocercus* (*vide* XIII, 367 *et seq.*, and XIV, 597), several additional specimens of *M. striatus* from Ceylon are true to the characters which I pointed out as distinguishing this bird from the closely allied *M. terricolor*\* of Bengal, &c.; though the approximation of some of them is extremely close: and with these, Dr. Templeton has favoured the Society with examples of a new species, which may be termed

*M. rufescens*, nobis. This pertains to the same section of the genus as *M. striatus*, *terricolor*, *malabaricus*, and *griseus*; but has the tail longer and more graduated;—in this respect, and in its colouring, approximating to the other or long-tailed section. Length above ten inches, of wing four, and tail five inches, its outermost feather an inch and three-quarters less; bill to gape an inch, and tarse an inch and three-eighths. Colour deep brown above, with no intermixture of grey except upon the crown, and bordering the primaries; flanks, abdomen, and lower tail-coverts, much the same; but the throat and breast vinaceous-brown. Bill and feet bright yellow. Inhabits Ceylon.

\* With regard to my identification of this bird with *Turdus canorus*, Lin. (XIII, 368), on the authority of Edwards's figure and description of his 'Brown Indian Thrush,' Mr. Strickland writes me word:—" *Turdus canorus*, L., is not founded on Edwards, pl. 184, (though Linnæus erroneously quotes that plate in his synonymes). *T. canorus*, L., is founded on *T. chinensis*, Osbeck; out of which Linnæus also inadvertently established his *Corvus* (vel *Lanius*) *faustus*. The latter specific name should stand, being used by Linnæus in his *Amœnitates Academicæ*, prior to using *canorus* in the *Syst. Nat.*

(N. B. Osbeck's name *chinensis* is out of the pale of the binomial nomenclature.) This bird has a white streak behind the eye, and is the *Ianthocinclu canora* of my Chinese list *Ann. Mag. N. H.* 1843, p. 221."

Some doubt still remains respecting the identification of *Garrulus albifrons*, Gray, with *M. Malcolmii* : but to the former must be referred the *Pale-eared Thrush* of Latham ; and his *Gogaye Thrush* is evidently a species nearly allied to *M. Earlei* and *M. caudatus*. Both the latter occur plentifully in Lower Bengal, above the tideway of the river ; frequenting hedges and small detached trees in the open cultivated country, and never “mango topes” or groves, like *M. terricolor*. It is remarkable that *M. Earlei* has the iris bright light yellow, while that of *M. caudatus* is dark hazel.\*

The *Timalia hypoleuca*, Franklin, v. *T. Horsfieldi*, J. and S., is cited as *Chrysomma hypoleucos*, (Fr.) Hodgs., in *J. A. S.* XIV, 602, and Mr. Hodgson has designated the group *Chrysomma* in *P. Z. S.* 1845, p. 24. I agree with him that it is justly separable. This bird is the *Parus sinensis*, Lath., which specific name should stand, provided the species prove to inhabit China. It is also the *Gotah Finch*, and *Emberiza calfat*, var. A, of Latham.

Genus *Prinia*, Horsfield, and its immediate affines. This group was treated of in XIII, 375 *et seq.*, and some more recent discoveries in it by Mr. Jerdon are alluded to in XIV, 490. That gentleman has since obliged me with the loan of his specimens ; and it appears that a further dismemberment of the series is required, than the separation of the little group *Cisticola*. Without coining a new name, the species may be distributed under *Prinia*, *Cisticola*, and *Drymoica*.

The typical *Prinæ* have a rather longer, straighter, and more slender bill, which in all the Indian species appears to be constantly of a black colour ; and the hues of the plumage are mostly pure greyish and brightish olive-green above, with clear fulvous-white or yellow below. Altogether, they approximate more to the *Orthotomi*, or Tailor-birds ; so much so, that Mr. Swainson has suggested that *Pr. familiaris* of Java is “probably an aberrant species of *Orthotomus* ;” and Col. Sykes remarks, of his *Pr. socialis*, that it constructs the same ingenious nest, and has the same habits, same note, and feeds in the same manner, as

\* Recently, I have observed *M. caudatus* in abundance, in low bush cover in the vicinity of Midnapore ; and *M. Earlei*, also, is common in some parts of the same district, in general frequenting higher bush-jungle.—This genus, *Malacocercus*, seems to be wholly Indian, and finds its nearest allies in the African *Crateropodes*. The Burmese and Malayan countries seem to have no immediate representatives of it ; and, in the latter more especially, species of *Garrulax* seem to be almost wholly wanting.

*Orthotomus longicauda*.\* In general, I think it will be observed that they frequent higher jungle, and scrubby open country less, than the *Drymoica*; which would bear out their affinity to the *Orthotomi*: and, lastly, it may be remarked, that the first species below noticed was classed as an *Orthotomus* by, I believe, the Baron de la Fresnaye.

1. *Pr. flaviventris*, (Delessert,) vide XIII, 376. This species is remarkable for the absence of subterminal variegation to its tail-feathers.

2. *Pr. olivaceus*, (Raffles,) *Lin. Tr.* XIII, 313. Apparently closely allied to the preceding, but having a subterminal blackish band to its tail-feathers.

3. *Pr. familiaris*, Horsfield, figured both in the 'Zoological Researches in Java,' and by Mr. Swainson. Also evidently allied to the two preceding.

4. *Pr. socialis*, Sykes: *Foodkey Warbler* of Latham. Southern India.

5. *Pr. Stewarti*, nobis; *Sylvia kalaphutki*, Buch. Ham., MS.: probably *Flaxen Warbler*, var. A, of Latham. I found this species upon three specimens procured by Dr. Stewart near Agra, which alike differ from three of *Pr. socialis* before me, in their smaller size, considerably smaller bill, whiter throat, and much less distinct subterminal broad caudal band as seen above, the rest of the tail-feathers being also considerably more rufescent: in other respects the two species present a close resemblance. Length of wing an inch and three-quarters; tail two and a quarter; bill to gape nine-sixteenths; tarse three-quarters of an inch: the corresponding measurements in *Pr. socialis* being two inches, two and a quarter, eleven-sixteenths, and seven-eighths or nearly so. In the latter species, the tips of the tail-feathers have the terminal quarter of an inch conspicuously black, with a slight greyish edge beyond; while in the present species the dark band is much less broad, and only appears above as if showing through the feathers.

\* This observation concerning the nest leads me to suggest that the "unspotted verditer-blue eggs" found in some Tailor-birds' nests, as noticed by Mr. Hodgson, in *P. Z. S.* 1845, p. 29, were those of *Pr. Hodgsoni*, nobis; for the nearly allied *Drymoica* lay blue eggs, as remarked by Mr. Jerdon of *Dr. inornata*, and so do the *Malaccocerci*, *Sphenura*, &c., to which they approximate. As for Mr. Hodgson's two species of *Orthotomus*, I consider his *O. patia* to be decidedly the young of the other, previously named *O. lingoo* by Sykes. Mr. H. forwarded the young as a separate species to the Society's Museum.

6. *Pr. Hodysoni*, nobis, XIII, 376 : *Pr. gracilis* apud Jerdon, et nos passim.

7. *Pr. gracilis*, Franklin.\* A species which I consider to be this one, was observed abundantly in the low sâl jungles to the northward of Midnapore ; and some time previously, Mr. Jerdon forwarded a young bird with the MS. name *Pr. tarda*, which, without having now by me for comparison, I suspect will prove to be the same. Length four inches and a half, by five and three-quarters in alar expanse ; wing an inch and seven-eighths ; tail two inches ; bill to gape five-eighths ; tarse thirteen-sixteenths of an inch. Some specimens are rather smaller. Bill black ; irides deep amber ; bare orbits dull yellow ; feet dull orpiment-yellow. Colour slightly rufescent olive above, greyer on the head and neck ; the wing-feathers edged externally with rufous-brown : under-parts silky-white, tinged with yellowish-fulvous on the flanks, and faintly on the sides of the neck : tail brown, albeseent-greyish underneath, with subterminal dark band and whitish tips, much more conspicuous on the under surface than above. The following is the description which I took of Mr. Jerdon's specimen from S. India :—

Colour light greyish olive-green above, slightly fulveseent white below, with a tinge of yellow on the sides of the neck : wings pale dusky, margined with light rufescent-brown ; and tail the same, with a very strongly marked subterminal blackish band and pale greyish tips, as seen beneath, but the former scarcely visible on its middle feathers above : bill pale, the ridge a little dusky towards its tip ; and legs very pale, probably flesh-coloured in the recent specimen. Length about five inches or less, of wing one and seven-eighths, and middle tail-feathers two inches, the outermost an inch and an eighth less ; tarse thirteen-sixteenths.—This species is very common in the Midnapore jungles, in straggling flocks of a dozen or more individuals ; and a number of them together sometimes utter a twittering kind of song : but from their small size, restlessness, and the nature of the cover they frequent, it requires some patience to obtain a number of specimens.

8. *Pr. rufescens*, nobis, n. s. Closely allied to the last, from which it is distinguished by the much more rufous colouring of its entire

\* Nec *Pr. gracilis*, Ruppell, which should be a *Drymoica*, if the distinction here proposed be adopted.

upper-parts, and of the flanks: the tail above, and wings externally, are uniform rufous or light ferruginous. Inhabits Arracan.

To *Cisticola* we can only refer

*C. cursitans*, (Franklin.) India generally, including Lower Bengal, though chiefly above the tideway of the river. A second species is common in parts of the south of Europe, the *C. schœnicola*, Bonap.; and a third occurs in Australia, recently described (and since figured) by Mr. Gould as *C. campestris*, *P. Z. S.* 1835, p. 20.\* These little birds frequent sedges and long grass in the open country, also growing corn and other low crops; and the Indian species may be commonly observed to rise a little way into the air, as is the habit of so many birds that inhabit similar situations, repeating at quick intervals a single note—*jik, jik*. Like its European affine, it is also remarkable for the beautiful construction of its nest, *sewing* together a number of growing stems and leaves of grass, with a delicate pappus which forms also the lining, and laying four or five translucent white eggs, with reddish-brown spots, more numerous and forming a ring at the large end, very like those of *Orthotomus longicauda*. It abounds in suitable districts throughout the country.

*Drymoica*, Sw. The types of this division, as cited by Mr. Swainson, are—1, the European *Cisticola schœnicola*,—and 2, *le Capocier* of Levaillant, or *Sylvia macroura*, Lath., of South Africa, considered identical with the species figured in Denon's Egypt. Other African species have been figured and described by Ruppell and by Dr. A. Smith: but no restricted *Prinia* appears to have been yet met with on the African continent. To the same immediate group as *Dr. macroura*, (Lath.) Sw., must also be referred several Indian species, some of which are very closely allied together, and difficult to describe apart. The bill is shorter, less slender, wider and deeper at base, with more developed stiff rictal bristles, than in the true *Prinice*; and, if black, is only of this colour during the breeding season, as in *Sphenura* and *Megaturus*. The plumage is commonly plain deep brown, darker

\* Add, also, several of Dr. A. Smith's *Drymoicæ* of South Africa, as *Levaillantii*, *terrestris*, *cherina*, *subruficapilla*, apparently also the large *natalensis*, and perhaps *chinitana*. His *Dr. textrix*, or the *Pincpinc* of Levaillant, constitutes Mr. Swainson's further subdivision *Hemipteryx*. Gould also figures and describes a *C. magna* from Australia.



(or sometimes rufous) on the crown, where the feathers have usually somewhat paler margins ; the lores, under-parts, and more or less developed eye-streak, pale ; and the graduating tail-feathers have a subterminal dusky bar and pale tip, in general distinctly traceable, but less strongly marked and contrasting than in the *Prinia* and *Cisticolæ*. They inhabit low scrubby bush-cover in the open country, rather than high bush-jungle, to which the *Prinia* chiefly resort ; or long grass, the favourite abode of the *Cisticolæ* : and the nest is of ordinary construction and open above, neither formed by sewing a few grass stems and leaves together, in the manner of the *Cisticolæ*, nor broad leaves, like the *Orthotomi* and (so far as known) the *Prinia*. At the head of the Indian species may be placed

1. *Dr. criniger* ; *Suya criniger*, Hodgson, *As. Res.* XIX, 183. Nepal.

2. *Dr. longicaudata* ? *Sylvia longicaudata* (?), Tickell, II, 576 : *Prinia macroura*, Franklin (nee *Sylvia macroura*, Lath.), altered to *Pr. Franklinii*, nobis, in XIII, 376. (*Non vidi.*) Hab. Indian peninsula, probably to the northward chiefly.

3. *Dr. sylvatica*, Jerdon. A specimen of what appears to me as the young of this bird, has been forwarded on loan by Mr. Jerdon with the specific name *neglecta*.\* The plumage has the unsubstantial texture characteristic of immaturity ; and the general colour is not so dark, the crown being of the same faintly rufescent brown as the rest of the upper-parts,† the rufescent edgings of the wing-coverts and primaries are more developed, and the tail is much shorter ; its middle feathers measuring but two inches and a half, and the three or four outer tail-feathers having broader but ill-defined dull whitish tips, and no decided indication of the subterminal dusky band (which I also find to be the case in certain unshed tail-feathers of a specimen of *Dr. Jerdoni*, while those that had been moulted resemble the corresponding feathers of *Dr. sylvatica*). Entire under-parts of the same uniform clear fulvous-white. Length of wing two inches and a quarter ; of bill to gape five-eighths, and tarse seven-

\* It is described by Mr. Jerdon as *Prinia neglecta*, in the *Madr. Journ.* No. XXXI, 130 ; being altogether different from *Dr. Jerdoni*, of which that gentleman forwarded a second specimen by the same opportunity.

† In the young of *Dr. Buchanani*, the rufous crown is much less marked than in the adult.



eighths, having apparently been fleshy-white. This young bird (for such it certainly is, whatever its species), was procured from the jungle skirting the base of the eastern ghauts of the peninsula. *Dr. sylvatica* inhabits the Neilgherries, but I believe is not confined to them.\*

The Society has received a species from Java almost exactly similar to *Dr. sylvatica*, but smaller, having the wing but two inches and an eighth, instead of from two and three-eighths to two and a half: the bill, however, is fully as long, or longer than in most specimens of *Dr. sylvatica*, and the tips of the tail-feathers have a much broader and more conspicuous dusky band, as seen from beneath, with a narrower whitish terminal margin.

4. *Dr. brevicaudata*, nobis, *n. s.* Length five inches and a quarter, of wing two and an eighth, and tail but two inches, its outermost feathers half an inch shorter; bill to gape five-eighths, and tarse three-quarters of an inch. Colour plain uniform greenish olive-brown above, inclining to tawny towards the tail; paler and albescent below, passing to olive on the flanks: the anterior third of the under surface of the wing nearly pure white. Bill dusky, and legs pale. From Darjeeling.

5. *Dr. Jerdoni*, nobis: described as a new species of *Prinia* in XI, 883, but regarded as a variety of *Dr. inornata* in XIII, 376. Intermediate to *Dr. sylvatica* and *Dr. inornata* (vera) of Southern India; also nearly allied to the Javanese species, which it resembles in size, but differs in its subterminal dusky tail-band not being nearly so broad, and essentially resembling that of *Dr. sylvatica*. Except in being smaller, I can detect no available distinction of this species from *Dr. sylvatica*; i. e. distinctions which I might predicate as constant: but two specimens before me correspond exactly in dimensions; having the wing two inches and an eighth, middle tail-feathers two and a half, bill to gape five-eighths, and tarse three-quarters. Inhabits Southern India.

6. *Dr. inornata*, (Sykes.) This is smaller, again, but otherwise similar, except that the tail-feathers are more albescent under-

\* I recently obtained a single specimen, about 40 miles to the N. W. of Midnapore. It was in an open bushy place, near tree-jungle; where also were many of the *Chrysomma hypoleucos*. Its note was a long-continued and rapid repetition of the sound *twit*. Length six inches and a half, by seven inches in spread of wing; closed wing two inches and a quarter; tail three and one-eighth. Legs caraneous-brown; irides deep amber, as usual throughout the group.

neath, and the subterminal dusky band tends to contract into a medial spot on each tail-feather. Length of wing under two inches, of middle tail-feathers two and a quarter, bill to gape barely five-eighths, and tarse three-quarters of an inch. A specimen sent by Mr. Jerdon with the name *sericea*, I take to be the young of this; distinguished by the looser texture of its feathers, and by its general much paler colouring: also from Southern India.

7. *Dr. fusca*, (Hodgson,) *P. Z. S.* 1835, p. 29: *Prinia inornata* of Bengal, Nepal, &c., apud nos, *passim*. Hab. also Arracan. Plumage altogether more fulvescent than in the preceding species, and less firm in texture; with the tail-feathers much browner, and not so strongly marked at the tips: all the wing-feathers broadly edged with rufous-brown, and tail tinged with the same. Inhabits likewise the Midnapore district.

8. *Dr. Buchanani*, nobis; altered from *rufifrons*, Franklin, XIII, 376: *Prinia brunnifrons*, Hodgson, *Ann. Mag. N. H.* 1845, p. 19; probably *Sylvia longicauda*, var. A, of Latham. Nepal, Upper Bengal, Southern India.

9. *Dr. lepida*, nobis, XIII, 376. During an excursion up the river, I obtained several specimens (and observed many more) of a strongly marked species, which appears to be this one, so far as I can identify it from comparison with the injured Scinde specimen. Length four inches and three-quarters to five and a quarter; the tail varying from two and one-eighth to two and five-eighths, with its outermost feathers from an inch to one and a quarter less; alar expanse five inches and a quarter to five and a half; closed wing an inch and three-quarters; bill to gape half an inch, or a trifle more; tarse five-eighths of an inch. Irides bright yellowish-brown: bill plumbeous, paler (and sometimes carneous) below; legs pale carneous, with a faint tinge of yellow. General colour light olive-grey above, each feather having a mesial dusky streak, broader on those of the crown and back: wings light dusky-brown, the feathers margined with olive-grey: and tail throughout distinctly banded above, with narrow transverse dusky lines; below pale, with whitish tips, and a subterminal dusky band to each feather: the under-parts throughout are greyish-white, with lores and a slight supercilium of the same. This bird inhabits low scrub, intermixed with tufts of coarse sedgy grass, growing in sandy places by the

river-side ; and it frequently flies out to feed among the thin herbage growing along the margin of the sand-dunes.\*

*Malacopteron* group. I know of no birds more difficult to arrange than the chiefly Malayan series nearly allied to true *Timalia*, to certain species of which Mr. Eyton first gave the name *Malacopteron*. Twelve or more species of this series are now before me.

First, following true *Timalia* and *Macronous*, we have *Turdinus*, nobis, XIII, 382, founded on *M. macrodactylus* of Strickland. Lord Arthur Hay has recently added, with a mark of doubt, a species which his lordship terms *Turdinus? superciliaris* (*Madr. Journ.* No. XXXI, p. 163); but suggests a divisional name, *Turdirostris*, and defines its characters, in case should it be deemed separable, which I now consider it to be. Indeed, I am not satisfied that its affinities are not rather with *Copsychus* and *Kittacincla* (p. 139, ante).

Next, might come *M. magnum* of Eyton, with which I would only place an allied and larger species of the series before me, which may be described as

*Malacopteron majus*, nobis. Length seven inches and a half, or more ; of wing three and a half ; and tail three inches : bill to gape an inch ; and tarse thirteen-sixteenths of an inch. Colour resembling that of *M. magnum*, except that the upper tail-coverts are brighter rufous, and that the rufous feathers of the forehead and vertex are not tipped with black. Found at Malacca. What appears to be a female of this bird has been since received from Penang. Colour the same, except that the head is plain brown, like the back, and the tail is more rufous underneath : there is a dark line from the base of the lower mandible, bordering the white throat ; and the wing does not exceed three inches.

*M. magnum*, Eyton, *P. Z. S.* 1839, p. 103. Length approaching to six inches ; of wing two inches and seven-eighths ; and tail two and three-quarters ; bill to gape above three-quarters of an inch ; and tarse three-quarters. Colour olive-brown above, greyish towards the neck, more rufous over the rump, and the tail brownish-ferruginous ; forehead and vertex bright rufous, the feathers narrow-spatulate, of rigid texture, and tipped with black ; occiput black ; the small feathers around the

\* Lord A. Hay informs me of an additional undescribed species, very common in the Upper Provinces, which he calls *Dr. terrestris* (*Non vidi*). This specific name has, however, been previously applied to a South African *Cisticola*.

eye white-centred : lower-parts white, slightly tinged with brown, more especially on the sides of the breast. Bill and feet pale, the former darker above. Also from Malacca.

These two species are distinguished by a much compressed bill, of moderate length, and strongly and abruptly hooked at tip ; and by the peculiar rigid feathers of the forehead and vertex ; *M. majus* being moreover stronger and more robustly made, as well as longer, than *M. magnum*, which latter bird has been rather unlucky in its appellation.

*Trichastoma*, nobis, XI, 795. This has been referred to *Malacopteron*, but may now be restored, and I think *Malacocincla*, nobis, XIV, 600, might be included in it. The bill is more elongated, less compressed, and less abruptly curved at tip, than in the preceding section ; widening considerably at base, and pretty regularly in the first species, while in the second it is narrower and more slender, and in the third (which must be regarded as aberrant) it is deep and much compressed. The species are *Tr. ferruginosum*, nobis, XIII, 383, —*Tr. rostratum*, nobis, XI, 795,—and *Tr. Abbotti*, nobis, XIV, 600. The two former are from Malacca, and the third was described from Arracan, whence the Society has received several specimens altogether similar ; but it has now also one from Malacca, which differs in being of a much more olivaceous and less rufous tinge above, with also less rufous below, and that of the upper tail-coverts is not so deep.\*

Next follows *Alcippe*, nobis, XIII, 384 : of which the following species are before me.—1, *A. atriceps* (*Brachypteryx atriceps*, Jerdon) ; —2, *A. affinis*, nobis, XIII, 384 ;—3, *A. ciurea*, (Eyton), *ibid* ;—4, *A. poiocephala* (*Timalia poiocephala*, Jerdon) ;—5, *A. sepiaria* (Horsfield) ;—6, *A. nipalensis*, (*Siva nipalensis*, Hodgson), of which *A. Phayrei*, nobis, XIV, 601, seems to be merely an individual variety. Nos. 3, 4, 5, and 6, respectively from Malacca, S. India, Java, and Nepal and Arracan, are very nearly allied ; especially the two last, which present the same dark lines proceeding from over the eye down the nape.

Very close to the above, and scarcely separable from them, ranges my *Setaria albogularis*, XIII, 385 ; and if *Brachypteryx nigrocapitata*

\* *Brachypteryx bicolor* of Lesson, vide XIII, 385, is not improbably either *Tr. ferruginosum* or *Tr. rostratum*.

of Eyton truly belong to the present series, another subdivision will be required for its reception.

I have at length brought my remarks on the *Insessores* to a close for the present; and it is not likely that I shall again have such an accumulation of them to deal with. In conclusion, I may once more refer to Mr. Hodgson's late paper, in the 'Proceedings of the Zoological Society,' for April 8th, 1845, to identify a few more synonymes than have been already indicated in the present article.—*Mixornis ruficeps* = *M. chloris*,\* *J. A. S.* XI, 794, and note to XIII, 380; *Erpornis xanthochlora* = *E. xantholeuca*, Hodgson, XIII, 380; *Horcites schistilatus*, *Horornis?* *fuligiventer*, and *H?* *fulvicentris*,—*non vidi*; *Chelidorynx chrysoschistos* = *Rhipidura hypoxanthus*, (nobis,) XII, 936. The reduction of synonymes is oftentimes a more acceptable service to Zoology, than the establishment (or especially the semi-establishment) of species previously undescribed; and the time and labour expended in the task of reducing synonymes, can only be appreciated by those who have personally engaged in it.

*Postscript.*—The *Strix indranee* of Sykes, *Proc. Zool. Soc.* 1832, p. 82, is a species which has not heretofore been identified; but I think there can be little doubt that it refers to the young of *Bulaca newarensis*, Hodgson, *As. Res.* XIX, 168, and *J. A. S.* VI, 372, v. *B. monticola*, Jerdon, *Madr. Journ.* No. XXX, 167; there being evidently a mistake in the dimensions assigned—"longitudo corporis 21 unc., caudæ 9,"—21 being put for 11. Thus Mr. Jerdon gives—"Length of male 20 in., of female 22 in. Of the latter the wing is 14, tail 9;" and in a fine specimen from Goomsoor, which looks in imperfectly mature plumage, the length of wing and tail are respectively as here given; but its total length would scarcely have exceeded 19 in. Mr. Hodgson states that the sexes of his *B. newarensis* "are alike both as to size and colours," and merely gives the dimensions as "20 to 21 inches, by 48 to 50 between the wings:" but rather the larger of two fine specimens before me, from the N. W. Himalaya, has the wing 17 inches long, and the tail 11 inches; and its total length, when recent, must have been fully 2 ft. All, however, are evidently of the same species, which must now accordingly rank as *Bulaca indranee*, (Sykes.) Mr. G. R. Gray has figured this bird with yellow irides, instead of their being dark brown:

\* Probably *Motacilla rubicapilla*, Tickell, as I formerly suggested.



such a feature would detract from its undoubted near affinity for *Syrnium*, to which genus Mr. Gray even refers it.\*

The other Indian species of *Bulaca*, which is currently (but by no means satisfactorily) referred to *Strix sincensis*, Lath., is beautifully connected in the same group with *B. indranee* by the intervention of the Malayan *B. seloputo*, (Horsf.), v. *pagodarum*, (Tem.)

With regard to *Syrnium nivicolium*, XIV, 185, XV, 9, I find that it has a fulvous phase and a non-fulvous phase of plumage, corresponding to what obtain in *S. aluco*; but the dark markings are always much deeper-coloured in the European species, and mottle the plumage more uniformly and more minutely; the black being much more predominant on the upper-parts, and without producing any streaky appearance. The ground-hue of the lower-parts is quite white in some specimens, deep fulvous in others, but in all is mottled similarly with dull black.

Genus *Bucco*, Lin. There are several allied species of small Barbets which require discrimination.

1. *B. indicus*, Lath. One of the commonest birds of India generally, but I have not yet seen it from Ceylon, where it is replaced by one of its affines; on the eastern side of the Bay of Bengal, I have seen it from Arracan, the Tenasserim provinces, and Malayan peninsula (where it seems rare); so that it may also be the *B. philippensis* of Raffles's list of Sumatran birds, which, he remarks, "does not appear to be different from the *B. indicus*."

2. *B. philippensis*, Lin. : *B. rubicollis* (?), Cuv. This has been generally confounded with the preceding species; but (from the description) it should differ in wanting the black on the crown and sides of the neck. Dr. Horsfield includes it in his catalogue of the birds of Java.

3. *B. rubricapillus*, Gmelin; founded on the "Red-crowned Barbet" of Brown's 'Illustrations.' On comparing four specimens of a small Barbet from Ceylon with Brown's most wretched figure, I have no doubt that they are of the species meant to be represented; in which case Brown must have got up his coloured drawing from a much injured skin. This Ceylon bird differs from *B. indicus* in having its throat, and above and below the eye, orange-yellow, instead of sulphur-yellow;

\* In his Catalogue of Mr. Hodgson's specimens presented to the British Museum, I am glad to see that Mr. Gray also refers *B. newarensis*, Hodgson, to *Strix indranee* of Sykes.



in the much inferior development of the crimson gorget, which is little more than indicated; in the black of the moustaches and ear-coverts being replaced by dull verditer, that of the crown being also considerably less developed; and in the abdominal region and lower tail-coverts being uniform *streakless* pale green, more or less faintly tinged with verditer: the feathers of the upper-parts, also, are margined with dull verditer, instead of yellowish; and the nasal bristles are yellow at their extreme base.

4. *B. malabaricus*, nobis. In XV, 13, I referred a small Barbet, from Malabar, sent on loan by Mr. Jerdon, to *B. barbiculus*, Cuv., as it agreed with the description of that Molucca species in the *Dict. Class.*; but in Griffith's brief notice of *B. barbiculus* ('An. Kingd.' VII, 469), "a yellow post-ocular spot" is mentioned, which, conjointly with the difference of habitat, induces me now to consider the Malabar species as distinct. From my description of the latter (*loc. cit.*), it would appear to differ only from *B. rubricapillus* of Ceylon, in having the throat and around the eyes crimson, instead of orange-yellow; the crimson of the throat comprehending the slight crimson gorget of *B. rubricapillus*, and being there bordered with yellow, alike in both species.

5. *B. barbiculus*, Cuv. Inhabits the Moluccas.

6. *B. cyanotis*, nobis. In XV, 13, I remarked that—"In Arracan, there is further the *B. australis*, Horsf. (v. *gularis*, Tem.); but the crimson of the cheeks, sincipita, and moustaches, seems invariably to be much less brilliant than in Malacca specimens." The close similitude of some of the preceding races has induced me to look more particularly to the differences of the two referred to in the above passage; and I have found a good distinguishing character in the Arracan bird having constantly the ear-coverts of the same verditer-blue as the throat, while the Malacca bird has invariably black ear-coverts slightly tipped with verditer: but the crimson spots are so much weaker in the present species that the two may always be distinguished at a glance.

7. *B. trimaculatus* (?), Gray, mentioned in Eyton's list of Malacca birds, *P. Z. S.* 1839, p. 105: *B. australis* of Raffles's list of Sumatran birds, and hence apud nos, XV, 14; but not of Dr. Horsfield's Javanese list. This is distinguished from *B. australis* by having no yellow about

it; and I cannot doubt that it is Mr. Gray's *B. trimaculatus*, because the name is a very good one, and the habitat is correct; besides that I doubt the existence in the Malayan peninsula of more than the following species—*B. chrysopogon*, *versicolor*, *armillaris*, *quadricolor*, *indicus*, and the present *trimaculatus* (?), heretofore confounded by me with *B. australis*. Colour deep green above, yellowish-green below: tail verditer beneath, and a tinge of the same above, and also at the bend and edge of the wing: throat bright light verditer; the sides of the forehead and posterior half of the crown, verditer blue-grey: anterior half of the crown, ear-coverts, feathers at base of lower mandible, and slight gorget (more or less defined), black: three large crimson spots on the sides of the face, one behind the eye and above the ear-coverts, a second below the lores and in front of the ear-coverts, and a third below the ear-coverts. Bill and legs black: the vibrissæ extremely long. What appear to be the females are duller in their colours, with generally some appearance of crimson below the black gorget. The young are wholly green, paler beneath, with the base of the lower mandible white in dry specimens.

8. *B. australis*, Horsfield (nec Raffles): *B. gularis*, Temminck. Inhabits Java.

9. *B. flavifrons*, Cuv. From Ceylon. (*Non vidi*.) This would seem to be considerably allied to the last. All these species appear to resemble each other in size.\*

*Picus major*, *P. himalayanus*, and *P. darjellensis*† (vide XIV, 196). In these three nearly allied Woodpeckers, the bill is shortest and most robust in *P. major*, longer and more slender in *P. darjellensis*, and in *P. himalayanus* intermediate. The adult male of the first has a narrow occipital band of bright crimson; that of *P. darjellensis* has a scarlet occipital band more than twice as broad as in *P. major*; and that of *P.*

\* An error seems to have crept into my description of *B. quadricolor*, Eyton, XV, 14, to judge from three specimens since received by the Society. Instead of—"beneath the eye, and middle of fore-neck, also crimson," read *deep blue*.

† In Mr. Gray's list of Mr. Hodgson's specimens presented to the British Museum, *P. darjellensis* bears the hybrid name *P. majoroides*, Hodgson, Gray, *Zool. Misc.* and *P. moluccensis* apud Hodgson (which is *P. pygmaeus*, nec *P. nanus*, of Vigors), is referred to *P. zizuki*, Tem.; but does not the latter refer to *P. moluccensis* verus? *Gecinus chloropus*, (Vieillot,) apud nos, is also referred by Mr. Gray to *P. xanthoderus*, Malh., 1845; but I retain my opinion that it is the *chloropus*.

*himalayanus* has the whole coronal and occipital feathers crimson-tipped. The well defined whitish frontal band of *P. major* is narrower in *P. darjellensis*, and ill-defined and mingled with reddish in *P. himalayanus*. *P. darjellensis* is further distinguished from the two others by having broad black central stripes to the feathers of the abdomen, flanks, and sides of the breast; and by the black moustachial stripe not being continued round the ear-coverts, but the fulvescent hue of the latter is continuous with a broad dull golden-fulvous band on the sides of the neck; the lower tail-coverts of *P. darjellensis* are also a weak scarlet, and not crimson. Both the Himalayan species have the white bars on the primaries much narrower than in *P. major*; and in *P. darjellensis*, the white wing-patch is much smaller than in the two others. Lastly, *P. himalayanus* has the black markings on the sides of the neck less developed and less strongly defined than in *P. major*, descending much less upon the breast, where a ferruginous stain is always perceptible; and the upper third of the ear-coverts are black, instead of their being wholly whitish, as in *P. major*.

*P. canicapillus*, nobis, XIV, 197, ranges southward to the Tenasserim provinces, but in the Malayan peninsula is replaced by *P. moluccensis* (*verus*), v. *Tripsurus auritus*, Eyton,—distinct from *P. Hardwickii*, Jerdon, of India.

*Yunx torquilla*, Lin. A British specimen of this bird, lately received by the Society (in a collection sent by the “Cornish Institution”), is conspicuously different from all the numerous Indian specimens which I have seen, in the whiteness of its abdominal region; contrasting with the fulvescent hue of its under tail-coverts, and also breast: the abdominal markings are also much less developed; and the grey bordering the medial dorsal streak is more albescent.\* In Indian Wrynecks, the whole colouring is somewhat more uniform; and the abdominal region is either quite concolorous with the lower tail-coverts, or very slightly paler (in hardly an observable degree); the markings of the underparts throughout being much more developed. The note of the Indian bird is quite similar to that of the British Wryneck; of which it can scarcely be considered more than a variety: but *Y. pectoralis*, Vigors, of South Africa, merely differs in having a large rufous mark on the throat and breast. I have observed these birds in tolerable abundance

\* The descriptions of the European bird mention the whiteness of its abdominal region.

upon some of the partially cultivated alluvial islands up the river; and recently shot one, near Midnapore, in the act of running up the perpendicular bole of a tree, in the manner of a Woodpecker. It is very seldom that the Wryneck is seen to climb; and that it ever does so has, I think, been denied: but in England I once winged one of these birds, and placing it on the trunk of a tree, it immediately ascended with such celerity that I nearly lost it, pressing its soft tail against the bark, as the stiff tail of a Woodpecker or Tree-creeper is applied.\*

*Eudynamys orientalis*, (Liu). Two males received from Ceylon seem to have fed on some fruit that has stained and affected the healthy condition of their beaks, which are of a blackish colour, with rugous exterior, instead of being smooth and of a pale greenish hue, as usual. This bird seems perfectly identical in India, China, and the Malay countries; but the Australian Coël (*Eu. australis*, Sw.), which was confounded with it by Messrs. Vigors and Horsfield, is constantly larger; the wing, in three males now before me, measuring  $8\frac{1}{4}$  in. instead of  $7\frac{1}{4}$  in.; and the tail  $8\frac{1}{2}$  in. instead of  $7\frac{1}{2}$  in.: one of these specimens has two unmoulted secondaries in one wing, of its first plumage, which are barred rufous and black, but very unlike the corresponding feathers of a female or young male of the Asiatic species.

*Rhinortha chlorophæa*, (Raffles.) Upon a former occasion (XIV, 199), I asserted the specifical identity of the previously supposed two species of *Rhinortha*; but I find that the two phases of plumage observable in this bird seem to be characteristic of the adult male and female, rather than of the adult and young. Thus, the grey-headed bird with rufous tail—*Cuculus chlorophæus*, Raffles, v. *Phœnicophaeus caniceps*, Vigors, and *Anadœnus rufus*, Swainson,—appears to be the male; and the rufous-headed bird with barred black tail—*Rh. lucida*, Vigors, v. *An. rufescens*, Swainson, and *Phœnicophaeus viridirostris*, Eyton—to be the adult female: the former being described, and the latter figured, as *Bubutus Isidorei* by M. Lesson, in the Zoology of M. Belanger's voyage. I have obtained a young specimen, with its wing and tail-feathers not fully grown: and this resembles the (presumed) adult female, except that its upper tail-coverts are dusky-rufous; the

\* Since the above was written, Lieut. Blagrave has sent two specimens of Wrynecks from the Upper Provinces; and these approximate the European bird, more than any other Indian Wrynecks that I have yet seen.

outermost and penultimate tail-feathers have no white at their tips, and the ante-penultimate very little ; there being also a strong tinge of rufous towards the subterminal black tail-band of the four middle tail-feathers, which, with other indications, tends to show that this specimen was a young male : its throat had been grey, with very flimsy feathers ; but a line of firmer rufous feathers were being developed along the middle of the throat. Another young specimen was moulting, and had nearly acquired the mature livery of the presumed male ; but several rufous feathers appear intermingled with the grey on its crown and neck ; and a single penultimate tail-feather is retained, dark and without subterminal black band and white tip, which shows that the male plumage is obtained on the shedding of the first or nestling garb, and consequently that the intermediate (or presumed feminine) plumage is not assumed by the other sex.

*Corvus splendens*, Vieillot, black variety ? Such appears to be a single specimen of a Crow, received from Ceylon.

Genus *Crypsirina*, Vieillot, treated of in XII, 932, and XV, 30. It seems that *Dendrocitta*, Gould, is the name that must stand for the group exemplified by *Corvus rufus*, Scop., Lath., v. *Coracias vagabunda*, Lath. ; while *Crypsirina*, Vieillot (v. *Phrenothrix*, Horsf.), must be reserved for the *Corvus varians*, Lath., v. *Phrenothrix temia*, Horsfield, which is a very distinct type from the other.\* Fine specimens of the latter beautiful bird have lately been presented to the Society, by the Rev. J. Barbe from Maulmain, and by E. O'Ryley, Esq. from Amherst ; thus confirming Helfer's statement of its occurrence in the Tenasserim provinces, while on the Malayan peninsula it does not appear to have been yet observed. This species is very remarkable (among birds of the great passerine type of structure) for having but ten tail-feathers, like the Drongos† ; and it is curious that, at first sight, the tail even resembles that of a Drongo, in its expansion and exterior curl upward at tip : but there is this essential difference, that the tail of *Cr. varians*, instead of being forked, is, in the opposite way, extremely graduated

\* Mr. G. R. Gray has rightly separated them, in his Catalogue of the Genera of Birds.

† Except *Cr. varians* and the Drongos, the only truly passerine birds I know of that have fewer than twelve tail-feathers, are a few with rudimentary tails, as instanced by Mr. Hodgson's *Phœopyga*, vide p. 137, ante.



(much more so than is represented in Horsfield's figure, in the 'Zoological Researches in Java'); and the expansion and curvature is accordingly exhibited by the two middle feathers, instead of the outermost as in the Drongos.

*Sturnia dominicana*, XIII, 363. The species described under this head stands now as *St. Blythii*, (Jerdon.) "*Pastor dominicanus*, anct.," writes Mr. Strickland, "is synonymous with *Turdus sturninus*, Pallas, also *T. dauricus*, Pallas, and *Pastor malayensis*, Eyton;" described in XV, 35. "*St. elegans* (Lesson)," XV, 364, adds Mr. Strickland, "is certainly *Oriolus sinensis*, Gmelin, founded on *Pl. Enl.* 617:" it would therefore now stand as *St. sinensis*: and I may add that *St. pugodorum*, (Gmelin, 1788,) has for a synonyme the *Turdus melanocephalus*, (Bahl, 1792,) as noticed in XV, 6.

Genus *Ploceus*, XIII, 945. The males of the three Indian species, after the breeding season, assume the colouring of their females by a change of plumage; and resume their bright colours by a partial change of plumage at the commencement of the hot season, or during March. The little Amadavat (*Estrela amandava*) also moults twice in the year, and in like manner assumes the female livery after the breeding season. This is well known of the Whidahs (genus *Vidua*.)

*Passer indicus*, Jardine and Selby, XIII, 946. As compared with the common European Sparrow (many specimens of each), the Indian common Sparrow has, perhaps, on the average, rather a shorter wing; the rufous predominates more on its upper-parts, and is brighter; the lower-parts are much whiter; and the ear-coverts are of an uniform subdied white. The females and young, also, are altogether considerably paler, both above and below: but the markings of both sexes are identical in the two races. It may be noticed that a tendency to exhibit the same differences is distinctly observable in *P. montanus* of the respective regions, which, of course, is in favour of the opinion that they truly are climatal varieties of the same. In habits, notes, and colouring of the eggs, there is no difference whatever between the European and Indian common Sparrows.

*Ligurinus xanthogramma*, (G. R. Gray.) In the 'Zoology of the Voyage of H. M. S. Beagle,' Mr. G. R. Gray has figured and described two species of Greenfinch (*Ligurinus*, Brisson), by the names *Chlorospiza melanodera* and *Chl. xanthogramma*; the former from East



Falkland Island and Patagonia ; the latter from East Falkland Island and Tierra del Fuego. In XIII, 956, I alluded to the latter as presenting " a close approach, on the part of the Greenfinches, to the Goldfinches (*Carduelis*), the Siskins (*Chrysomitris*), and also to the Linnets (*Linota*) ; the form of its beak scarcely differing from that of the Himalayan Siskin (*Chr. spinoides*) : " and in XIV, 554, I again alluded to this bird, remarking that the *L. sinicus* " agrees in size, and in the Goldfinch-like marking of its wings, with *L. xanthogramma* of the Andes." I was led into a mistake, however, in the identification of this Chilian species (as I was informed) with *L. xanthogramma* ; and have not yet been able to identify the bird in question, probably for want of the necessary works of reference. Its affinities are as I have stated, and it is very nearly allied to the Chinese Greenfinch (*L. sinicus*) ; but I have not now by me a specimen of the latter, with which to compare it.\* Length  $5\frac{1}{4}$  in. ; of wing 3 to  $3\frac{1}{2}$  in. and tail  $1\frac{7}{8}$  in. Colour hair-brown above, the interscapularies margined paler, and the crown and nape with greenish-brown ; rump brownish-yellow, passing to siskin-yellow towards the tail-coverts, which latter are pale greyish ; wings having the primaries and base of the secondaries marked with bright yellow, as in the Goldfinches, contrasting with the black winglet, and terminal half of the primaries which are tipped with whitish ; secondaries edged and the tertiaries tipped with whitish-grey, the rest of the outer web of the tertiaries brown ; under-parts paler brown, tinged with yellow, more especially on the throat, abdomen, and also on the forehead ; towards the vent white ; and the lower tail-coverts pure canary-yellow : tail dusky, with the basal half of all but its middle feathers bright yellow, and slightly edged with greyish-brown : bill pale, darker above ; and the legs pale.

In the same collection with the preceding were two examples of a species of *Serinus* (?), from Peru. Length about five inches, of wing two and five-eighths, and tail two inches. Upper-parts streaky, the feathers centred darker, with hair-brown margins ; rump dull siskin-yellow, and a faint tinge of the same on the crown and neck, and upon

\* Can it be the female of *L. sinicus* ? The collection in which two specimens of it occurred did contain some Chinese specimens, together with many from Chili and Peru ; but those from each locality were kept separately, with care, and I was assured that the birds in question were from Chili.

the shoulder of the wing : lores, throat, and under-parts generally, bright canary-yellow, tinged with a light ruddy colour on the breast and flanks : margins of primaries obscure dull yellowish. Bill small and short. This bird can scarcely be the *Chrysomitris compestris* of Gould, which inhabits the same region ?

*Nectarinia Horsfieldi*, nobis, XII, 975. I have lately seen a second specimen of this species, from Mussoorie ; so that it is probably peculiar to the N. W. Himalaya.

*Iora*—? In *Ann. Mag. N. H.* 1844, p. 42, Mr. Strickland remarks that—"Dr. Horsfield has lately obtained a new *Iora* equal in size to the small *Oriolus xanthonotus* ;" which species of *Iora* I alluded to in XIV, 602. Such a bird the Society has now received from Arracan, where it was obtained by Capt. Phayre. The specimen before me was probably a female, measuring 6 in. in length, the wing  $2\frac{3}{4}$  in., and tail  $2\frac{1}{4}$  in. ; bill to gape 1 in. ; and tarse  $\frac{3}{4}$  in. Colour plain green above, yellow below, brightest on the throat and breast ; no white markings on the wings, except a slight white edge to the primaries. If new, *I. innotata*, nobis. In XV, 44, I suggested that this genus might "perhaps come within the extreme confines of the *Meliphagidæ* ;" and subsequent observation of the habits of *Phyllornis* has led me (p. 118, ante), to approximate *Iora* to that genus, with which I think it should form a particular subfamily of *Meliphagidæ* (peculiar to Southern Asia and its islands) ; and *Oriolinæ*—to which Mr. Strickland regards *Iora* as subordinate—I regard as another subfamily of the same major group.

*Pycnonotus nigropileus*, nobis, n. s. In XV, 286, I had occasion to offer some remarks on the Bulbouls immediately allied to *P. jocosus* ; and now we have an analogous little group formed by the present species, with *P. bengalensis* and *P. hæmorrhous*. The bird now described inhabits the Tenasserim provinces, and merely differs from *P. hæmorrhous* in having no black on the throat and breast, which are brown with greyish margins to the feathers, like the back ; and the whole nape and back are much paler than in *P. hæmorrhous*,—the cap alone being black.

*Rubigula aberrans* (?), nobis, XV, 287 : *R. gularis*, fœm. (?) A second specimen received from Ceylon entirely resembles that previously described.

*Tchitrea affinis*, XV, 292. Specimens of *Shah Bulbuls* from Darjeeling are clearly of this species, as shown by the form of the crest, and the much narrower and less lengthened middle tail-feathers than in *Tch. paradisi*; but the black edgings of the tail-feathers are scarcely more developed than in the latter, and it is remarkable that in Malacca specimens these edgings are more developed than in those from Arracan and the Tenasserim provinces.

*Lanius lahtora*, XV, 300. To the synonymes of this species should have been added *L. lurra*, Gray, of Hardwicke's Illustrations, founded on a wretched native drawing, which was evidently intended to represent the ordinary grey Shrike of India.

*Tephrodornis affinis*, nobis, n. s. Merely differs from *T. pondicerianus* (XV, 305), in being greyer, and in wanting the conspicuous whitish supercilium. It is common in Ceylon.

*Niltava McGregoriae*, (Burton). The Society has at length received this beautiful little species from Darjeeling: and I have no hesitation in assigning to it, as synonymes, not only *N. fuligiventer*, Hodgson, but (as the female) *Leiothrix signata*, McClelland and Horsfield, vel *Niltava auricularis*, Hodgson, placed as a *Siphia* in p. 127, ante. The bird described by Mr. Hodgson as the female, in the 'India Review,' I, 650, is clearly of another species, being probably his *Dimorpha moniliger* (p. 127, ante). With the colouring and general structure of its congeners, this bird approaches *Muscicapula* in its small size, and form of bill; and it much resembles *Niltava grandis* in its colouring, but has merely the front (instead of the whole cap) ultramarine-blue, and scarcely a trace of this on the shoulder of the wing,—also the anterior half of the inner side of the wing white, instead of black,—and the abdomen dusky-ash passing into white towards the vent. Its range may now be traced from Simla to Darjeeling, and thence to Assam. The bill of this bird differs greatly from that of *N. sundara*, but that of *N. grandis* is intermediate.

*Muscicapula sapphira*, nobis, XII, 939; figured in Jerdon's 'Illustrations of Indian Ornithology.' In the female of this species, the wings, tail, and rump, are of the same beautiful deep blue as in the male; but the head, neck, and interscapularies, are plain brown; throat and fore-neck ferruginous, rather paler and much broader than in the male; and the belly and lower tail-coverts are of the same bluish-white as in the

other sex ; axillaries and free-part of the inner surface of the wing, also pure white. From Darjeeling.

*Siphia leucura*, (Gm.), p. 125, ante. With respect to the rufous throat of this species, I find that it is assumed by every male at the commencement of the hot weather, or during the month of March ; being obtained by a partial moulting confined to the feathers of the throat. I think that I have seen the same remarked of the European *S. parva*.

*Pratincola leucura*, nobis, n. s. In my notice of this genus (p. 129, ante), I overlooked the present species, which is the representative of *Pr. rubicola* and of *Pr. indica* in Seinde. Discussions of the latter species, and general aspect of the upper-parts as in the former, but the rufous of the breast is confined to a rather small patch, the sides of the breast and the whole abdominal region, with the lower tail-coverts (if not the upper also), being pure white ; and the exterior four (if not five) rectrices on either side are wholly white on their inner webs except at tip, the dark colour at tip increasing successively to the outermost feather, which alone has its whole outer web dark, the rest having merely the terminal half of their outer webs dark-coloured. Described from a slightly injured male (with imperfect tail, and its upper coverts wanting), in full summer dress, procured by the late Sir Alexander Burnes in upper Seinde.\*

*Ianthia flavolivacea*, (Hodgson,) p. 133, ante. A finer specimen of this bird than the one previously described, *i. e.* in fresher plumage, has the upper-parts fulvescent-olive, with the fulvous tinge somewhat stronger towards the tail, and the under-parts dilute rusty, having a faint golden gloss. It has much the aspect of the female *Tarsiger chrysæus*, Hodg., but is readily distinguished by wanting the yellow at the base of the tail, and by having its under-parts much less yellow. From Darjeeling.

*Tesia auriceps*, Hodgson, p. 137, ante. This has lately been received by the Society, and it appears to me to be merely a bright old male of *T. cyaniventer*, Hodgson, having (*i. e.* the Society's specimen) all its colours more intense than usual, and the cap fine golden-green rather than "golden-yellow," and not contrasting very strongly with the green of the back.

*Turdus unicolor*, Tickell, Gould, and *T. dissimilis*, nobis, p. 144, ante. I regarded these birds as distinct, more from deference to the opinions of others than from my own conviction : and now I have procured two

\* Add *Muscicapa lucionensis*, var. A, Latham, to the synonymes of *Pr. caprata*,

additional recent females which completely satisfy me of their identity. That described as *T. unicolor*, I now infer to be a very old female; and think it probable that old males, with rufous sides (as described under *T. dissimilis*) would also assume the more ashen hue of the upper-parts, and the spotless ashy of the throat and breast: but, in such case, the variation this Thrush would exhibit is most remarkable.

*Sitta europæa*, and *S. affinis*, XV, 288. Mr. Strickland informs me, that "the bird sent as *S. europæa* from Norway, is the *S. asiatica*, v. *uralensis*, auctorum, found in Siberia and the Ural, but never yet recorded from Norway, where, according to all my authorities, the true *S. europæa*, with the lower-parts fully as rufous as in Hodgson's *nipalensis*, is alone found." This latter species is distinguished from *S. europæa* by its much smaller size, &c., as mentioned in a note to XV, 289, and by a character which I did not then notice, (from an imperfection of the specimens at that time before me,) viz. that the two middle tail-feathers have, constantly, their basal half white, except on the longitudinal outer half of their exterior web.

*Totanus solitarius*, Vieillot, XIII, 389. This, according to Mr. Strickland, is identical with *Scolopax melanoleuca*, Gm., and *Sc. vociferæ*, Wilson.

P. S. No. 2. In the 'Calcutta Journal of Natural History,' No. 28, p. 560, it is remarked that the *Palæornis nigrirostris* of the Catalogue of Nepalese birds, is "asserted to be the young merely of *P. pondicerianus* vel *mystaceus*;" and its distinctness as a species is there argued. The latter, however, is not the case. I have long since ascertained the black-billed bird to be the female of *P. pondicerianus*; though occasionally, but rarely, females of this species will have a little red on the upper mandible, more or less. The same sexual diversity occurs in other species of *Palæornis*, as in *P. caniceps* and *P. erythrogenys* recently described from the Nicobar Islands, in *P. columboides* of the Neilgherries (the female of which is *P. melanorhynchus* of Sykes), and seemingly in *P. bitorquatus* of the Isle of France. The fine series of *P. pondicerianus* set up in the Society's Museum exhibits this fact most convincingly. The young female of *P. pondicerianus* was not long ago named *P. modestus* by Mr. Fraser (in *Proc. Zool. Soc.* 1845, p. 16).

The same correspondent asks—"Why was the publication of the 'Catalogue of Nepalese Birds' discontinued after about a tithe only had been given?" To this I think it will be sufficient to reply, that every one of the novelties contained in that catalogue has now been



published by me, excepting only such names as there were no specimens to answer to ; of which a very few only occurred.

A collection of birds from Afghanistan and the Deyra Doon, just received on loan from Capt. Hutton, affords the following novelties, which I proceed to describe out of hand.

*Malacocercus Huttoni*, nobis. Merely differs from *M. caudatus* in its larger size, and the general paler hue of its upper parts. Length of wing  $3\frac{1}{2}$  in., and of middle tail-feathers above 5 in. From Candahar.

*Carpodacus crassirostris*, nobis. Length about  $5\frac{1}{2}$  in., of wing  $3\frac{3}{8}$  in., and tail  $1\frac{7}{8}$  in. Bill highly *Pyrrhuline*, resembling that of *Hæmatorpiza* (XIII, 950). General colour earthy grey-brown above, faintly tinged with crimson on the tips of the feathers ; the under-parts, cheeks, forehead, rump and upper tail-coverts, conspicuously crimson-tipped ; and the alars and greater wing-coverts and rectrices except towards the tip, margined with deep crimson. Bill apparently yellow ; and legs pale. From Afghanistan.

*Emberiza? aurifrons*, nobis. A true Bunting, but with bill of peculiar form, much resembling that of *Passer arcuatus*, (Tem.), of South Africa. Length  $5\frac{1}{2}$  in., of wing 3 in., and tail  $2\frac{1}{4}$  in. ; its medial feathers  $\frac{3}{8}$  in. shorter. Forehead and vertex bright golden-saffron, much as in *Catamblyrhynchus diadema*, (Lafr.), figured by Mr. G. R. Gray ; occiput, cheeks, throat and fore-neck, black, passing to dusky on the nape and sides of the neck ; back dusky, with yellowish lateral margins to the feathers ; the rump towards the tail deep canary-yellow, shoulder of the wing golden fulvous-yellow, and margins of the remiges and rectrices saffron-yellow ; under tail-coverts pale canary-yellow, and rest of the lower parts albescent tinged with yellow, with a dusky central streak to each feather, and those of the breast dusky with yellow margins ; axillaries pure white ; a pale bar on the wing ; and the bill and feet dark. From the north-west Himalaya.

*Melanocorypha torquata*, nobis. Afghanistan Lark, XIII, 962. Nearly allied to *M. calandra*, from which it differs in its smaller size, and general paler hue ; the black of the sides of the breast meeting across. Length of wing  $4\frac{1}{2}$  in., and of tail  $2\frac{1}{4}$  in. ; tarse under 1 in. The exterior web of the outermost tail-feather is not white, as in *M. calandra*.

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*Notes, chiefly Geological, from Gooty to Hyderabad, South India, comprising a brief notice of the old Diamond Pits at Dhone, by Capt. NEWBOLD.*

From the granite rock of Gooty northerly, to about a mile or two beyond Piapully, granite is the prevalent rock.

The pebbles of a small stream running at the foot of the granite hill of Piapully, I found encrusted with carbonate of soda, and had the appearance of having been snowed upon. Reddish felspar is the prevailing mineral in the granite,—associated with chlorite, and actinolite, as at Gooty.

Beyond Piapully, which is  $12\frac{1}{2}$  miles from Gooty, pebbles of sand-stone and pudding-stone, quartz and chert, some of them angular and little worn, indicate the proximity of an aqueous deposit, which is shortly afterwards seen *in situ*, as a bed of pudding-stone capping the summit of a rugged hill sloping southerly, and again sweeping up, saddle shape. On the opposite side into a steep crag of granite scattered blocks of basaltic green-stone are seen in this vicinity; and the subsoil is often a bed of kunker.

*From the granite limits to Kurnool.*—From this locality to within a few miles south of the Tumbuddra, a range of hills having an average apparent height of 250 feet, the level and peculiar contour of which distinctly informs us of their nature,—continues flanking the right, or east, of the Kurnool at irregular distances of 2 or 3 miles, but now and then throwing promontory-like bluffs to the westward. These hills are of sand-stone, dipping slightly towards the east; and the rocks in the plain at their base granite, gneiss and hornblende schist. The sand-stone caps the granite, which is seen at several points along the range, forming the base and about three fourths of the height of some hills, as in the vicinity of Dhone and Ramulacota, on which rests a thick bed of sand-stone. The lower layers next the granite are often of pudding-stone, or conglomerate. The imbedded rocks are almost entirely pebbles of white and rust-stained quartz, much rounded, from the size of a filbert to that of a man's head. A few pebbles of trap, hornblende, tough actinolitic green felspar, and finty slate,—the very hardest portions of hypogene and granitic rocks,

are occasionally seen ; but I did not observe a fragment of the ordinary mass of granite or gneiss.

In shooting and other excursions among these hills across the N. and S. strike of the strata, I observed to the eastward the ordinary blue lime-stone of Cuddapah resting conformably on this sand-stone, and beds of a more recent sand-stone and conglomerate capping the lime-stone. This is the celebrated diamond conglomerate of Banaganpilly. That it is of more recent origin than the lime-stone and subjacent sand-stone, is proved by superposition, and by its imbedding fragments of chert derived from veins in the lime-stone.

These chert pebbles are recognized, not only by mineral identity, but by their imbedding the oolitic looking globules which are seen in myriads in the lime-stone cherts and jaspers.

I am not aware that the difference in the age of these two sand-stone beds has been before noticed, or that the existence of an older sand-stone formation underlying the Cuddapah lime-stone and the diamond conglomerate, has hitherto been pointed out either by Malcolmson, Voysey, or other writers on the geology of South India. I found sulphate of barytes in fine crystals in the lime-stone ; and beds of a fine steatite, (occasionally passing into French chalk,) which are quarried and the steatite exported to Madras, and other places. It is cut into pencils and extensively used by the natives for writing accounts, &c. in their black books of prepared cloth, and also for smoothing chunam.

Along the base of the hills half a mile N. E. of Dhone, the ground for half a mile is covered with old diamond excavations in a bed of sand-stone gravel, now covered with rubbish and bushes. North of this 10 or 12 miles are the diamond mines of Ramulacota before described.\*

The diamond pits of Dhone have not been worked within the memory of the oldest man of the village ; but he says his forefathers dug there : with what success is uncertain. Their being neglected may be perhaps received as a negative proof of their unproductiveness, or of having been exhausted.

Slightly thermal and perennial springs, and dykes of basaltic green-stone posterior to the sand-stones and limestone formation, which they penetrate and alter, are of frequent occurrence throughout the diamond

\* Journal Royal Asiatic Society, 1843, p. 231.

area ; as well as saline incrustations of carbonate and muriate of soda, both on the banks of the rivulets, and on the surface of the granite-based plains on the western flank of these hills.

The dykes of basaltic green-stone are occasionally seen traversing the granite and hypogene schists of the plain, like a black wall, and burying themselves in the sand-stone and lime-stone range to the eastward. An instance of this is observed about 4 miles S. of Dhone at the boundary pass. This dyke is in some places 150 feet high and 200 broad. Its course can be traced for miles.

The hill of Yeldoorty (22 miles S. from Kurnool) is of a poor ferruginous quartz rock veined with white quartz, the rocks in the plain, at its base, are granite and gneiss, with reddish felspar, penetrated by trap dykes.

At Woolundareonda (14 $\frac{1}{4}$  miles S. of Kurnool), the granite rises in small, but picturesque tors and logging stones. Here the sand-stone range approaches the road. A little further N. massive hornblende schist is seen in weathered and apparently waterworn masses.

The range terminates in the bluff whale-backed, sand stone hill of Juggernautli, about 3 $\frac{1}{2}$  miles south of Kurnool, whence the blue lime-stone and its associated shales base the plain to the banks of the Tumbuddra and Hendri at Kurnool,—the hypogene schists occasionally showing themselves. Here regur is the prevailing surface. From Gooty to Taikoor reddish sandy alluvial soil is much blended with it.

*From Kurnool to Paugtoor.*—After crossing the Rajghat ferry over the Tumbuddra, the tongue of land (here 16 miles broad), which lies between it and the Kistnah, is traversed ; like most others trips of land similarly placed, its surface is slightly convex,—rising gently towards the centre from the beds of the rivers which flank it. It is for the most part covered with regur, occasionally mixed with alluvium, based on the blue lime-stone of Cuddapah,—a bed of knicker often intervening. This soil is often 15 feet thick.

The wells naturally deepen towards the centre. One is 61 feet deep. The lime-stone is rarely seen above the surface ; the dip appears to be quâquâ versal in some low mammiform elevations ; in other localities it is nearly horizontal, or dipping at an angle of 5° towards the east.

Angular fragments of granite, gneiss, and hornblende schist sparingly scattered among the pebbles of the lime-stone formation on the river bank, attest the proximity of these rocks.

Rectangular blocks of a greenish crystalline limestone with reddish argillaceous, and arenaceous veins;—imbedding iron pyrites in cubic crystals. It is at first sight difficult to pronounce whether this rock is hornblende schist, rendered calcareous by contact with the lime-stone, or lime-stone which has taken up hornblende. I have little doubt that these blocks are from the junction line of these two rocks. It effervesces but feebly with acids.

*The Kistnah at Pangtoor.*—The Moorish fort and pettah of Pangtoor stand on the right bank of the Kistnah in the Nizam's territories, the S. frontier of which has been just crossed about half a mile N of Kurnool. The bank here is formed by two perpendicular cliffs of light bluish grey lime-stone, in nearly horizontal strata, divided by vertical fissures from summit to base, like those in the sand-stone ranges of Gundicota and Cuddapah.

The Kistnah here does not appear broader than the Tumbuddra at Kurnool, which, at the narrowest part between Raza and the fort, measures exactly 616 yards from bank to bank. The river was filled with the muddy freshes of the monsoon, and running, near Pangtoor at the rate of about 24 inches per second. A velocity calculated strong enough to transport pebbles the size of an inch in diameter; velocity, No. 6, of the scale laid down by the talented Secretary of the Royal Geographical Society,—Col. Jackson. It is, however, clear from an inspection of the size of some of the pebbles in the river's bed, (some of which are as large as a hen's egg,) that the velocity must often be increased to No. 7 of the scale; or to 36 inches per second. The temperature of the water is the same as that of the Tumbuddra (a foot below surface), viz., 79° Faht. exceeding by one degree the average temperature of rain-water in this part of the country. The temperature in the shade at the time of observation 86°; time, 2 P. M.

A tumblerful of the muddy water deposited, after standing 6 hours,  $\frac{1}{18}$ th of its bulk. The sediment was a fine reddish silt, which effervesced with acid; but is less calcareous than that of the Tumbuddra. The reddish colour of the deposit brought down by the Kistnah, a river which completely traverses the great overlying trap region, is worthy

of notice by those geologists who consider the regur or black soil of India as a fluviatile deposit ; or as the washings of trap rocks.

The still unflooded parts of the river bed consisted of collections of light-coloured sand and silt, and accumulations of pebbles from the size of a No. 4 pellet to that of an egg, as before stated. These pebbles were chiefly of quartz, calcedony, cornelian, agate, and Mocha stones : fragments of onyx and sardonyx rare and small. Also common and semi-opal ; heliotrope, and jaspers of various shades of red, brown, green and yellow.

I picked up some rolled bits of radiated zeolite, limestone, pegmatic granite with reddish felspar, and find nodules of cream-coloured and greyish white kunker.

Nothing but the very toughest fragment of the overlying trap, whence these calcedonics and zeolites have been washed for a distance of not less than 100 miles to the N. W. have remained entire ; these debris we must look for nearer to their situs, or try to recognize it in the sands : thus following the maxim in geological dynamics ; viz., that in alluvial beds the most indurated portions of transported matter will always be found at the greatest distance from their situs.

I am informed that in the bed of the river nearer its embouchure, the cat's eye and diamond are found in the Polnad Circar, and I know that the last named gem is found in the bed of the Kistnah in the eastern parts of Kurnool near Siddeswar, and still further east beyond the wilds of Perwut and the diamond mines of Purtial, Moogaloor, Codavacutloo, and Oostapully, which are on the N. bank of the Kistnah ; the diamond I have no doubt, has been washed out of the diamond sandstone formation of these tracts east of Paugtoor and Kurnool ; but the cat's eye, like those in Ceylon, is probably from the gneiss or granitic rocks.

*From the Kistnah to Judcherla, 60 miles northerly.*—The limestone formation extends about three miles in the plain north of the Kistnah, when granitic rocks are met with associated with gneiss in the vicinity of Myapore. This granite rock spring up irregularly from the surface of the plain, leaving often level spaces between each hill, but those of gneiss usually form short, and more regularly continued ridges.

These elevations, however irregular in detail, have a general direction



of E. S. E., which has apparently determined that of the Kistnah across the peninsula after escaping from the overlying trap formation. One of the peaks rises from the rest like truncated cone.

As I was obliged to pass the granite and lime-stone junction line by night, I am unable to afford a description of the disturbance, or of the mineral alteration in the latter rock which might be anticipated.

A succession of these rocks continues to be crossed until Judeherla is approached, 60 miles north from the Kistnah, when they sink into smooth undulating plains with an occasional granite rock starting up. The rocks in the centre of this granitic zone, in the vicinity of Paungal, attain the highest elevation, (viz. about 1000 feet above the plain.) The highest which I had an opportunity of measuring trigonometrically, did not exceed 950 feet.

The granite is generally small-grained, with reddish felspar, often coloured (as near Paungal) with actinolite or chlorite in quartz and felspar veins. Here also a graphie granite occurs in the gneiss.

Granitoidal gneiss (for the transition from granite to gneiss is imperceptible, and the alteration by contact under great heat mutual) is seen in low and rather smoothly swelling hills, around the bases of the loftier granite peaks.

The basaltic green-stone dykes have usually an easterly direction:—and, as a general rule, large dykes are crystalline towards the centre, and compact at the edges like the lava dykes of Somma and Etua. I observed crystallized epidote on a dyke at Paungal. Another dyke is seen close to the west side of the town of Judeherla, about 40 paces broad, and may be traced westerly as far as the eye can reach.

*From Judeherla to Hyderabad, 59½ miles northerly.*—From Judeherla the country is open; the formation gneiss,—penetrated by granite and basaltic green-stone. At Nagumpilly the fort stands on a bed of quartz in the granite which is intersected by a basaltic dyke containing hypersthene. A second dyke is seen between Nagumpilly and Furrucknugger; and two others a little north of Furrucknugger. This latter is from 30 to 50 paces broad, and takes a zigzag direction towards the east. Abundant efflorescences of natron take place on the surface of the soil in the vicinity.

Beds of quartz become more frequent in the granite as Hyderabad is neared. At Nagumpilly, just mentioned, 47 miles south of Hyderabad,



the bed or vein runs east by south, and in many places is amethystine.

In a vein of quartz near Palmacul the purple colour of the amethyst is more decided ; and, at this place, I detected, in combination with oxydulated iron ore, oxide of manganese, which I have little doubt imparts this beautiful tinge to the quartz.

At Shemsabad, about 19 miles south from Hyderabad, another vein of similar quartz occurs.

*Hydrabad.*—Hydrabad is situated in the lowest part of a shallow flat valley, bounded by irregular granite rocks which rarely rise more than 400 feet above its general level. According to the barometric measurements of the Trigonometric survey, Hyderabad is 1672 ft. above the level of the sea ; Secunderabad 1837 ft. ; and the granite rock of Moel Ally 2017 ft. The Mussy river flows easterly through this valley ; and, by a transverse break through the north and south ridge of Bhoneageer, about 18 miles to the eastward, to the Kistnah which it joins at Wujerabad, about 47 miles west of Amrawutty.

The plains around Hyderabad are often crowded with tors, logging stones, and globular masses of granite, which Broignart, on the authority of De Luc, has pronounced to be boulders ; but which are, without doubt *in situ*, as I have stated in a former paper on supposed boulder formations in South India.

The prevailing colour of the granite is reddish, owing to that of the felspar, which predominates almost to the exclusion of quartz.—The latter mineral is not wanting in the granite ; but, from some unknown cause in nature's laboratory, has been segregated in large veins and beds, instead of being diffused in grains throughout the substance of the rock. These veins, or beds, are still more amethystine than those of Shemsabad, Palmacul, and Nagumpully. Mr. Malcolmson is of opinion that the crystallized specimens found near the European barracks are fit for the purposes of jewellery. Another amethystine vein occurs, according to Christie, near the British native cavalry lines. Mr. Malcolmson has found it at Bekonurpett, about 60 miles north of Hyderabad, and I have traced it 46 miles westerly to Sedashipett ;—and 47 miles southerly to the vicinity of Nagumpully. It occurs often at Hyderabad in hexagonal pyramidal prisms filling cavities in quartz. Voysey mentions their occurrence at Pitlan and Ghazipettah.

Four or five dykes of basaltic green-stone, or possibly the ramifications of one enormous coulée, traverse the granite rocks of Hyderabad with a general easterly direction. One of them runs through the tombs of the kings at Golconda, and is probably identical with that seen six miles to the eastward between the British Residency and the great tank of Hussain Saugor. From the blasted and chiselled appearance of some of the blocks and mineral resemblance, this dyke has evidently contributed part of the material for the dark and highly polished slabs of which the royal tombs are constructed. It must not be confounded, as has been done by Malcolmson,\* with the dark talcose rock of the pillars supporting the tombs of Hyder and Tippoo at Srīringapatam. The rock on which stands the celebrated fortress of Golconda is of a granite resembling that of Gooty, with reddish felspar, quartz in small grains, dark dull green scales of mica, and a little hornblende. Actynolite, both crystallized and blended with compact felspar and quartz, occurs in veins pretty generally throughout the granitic rocks of Hyderabad.—A rough trigonometric observation from a paced base makes the rock of Golconda 450 ft. above the general level of the plain.

*Soil.*—The surface soil, in the vicinity of Hyderabad, is the reddish granite alluvium, partly washed down from the sides of the neighbouring hills, and partly the debris of the decaying rocks on the spot. It is originally reddish in colour, but often altered by cultivation and manuring into an ashy grey. It generally contains a small proportion of calcarious and saline matter,—derived, probably, from the infiltration of water which has held these minerals in solution.

The alluvium brought down by the Mussey (here from 100 to 180 yards broad), from the westward, is a reddish sand and silt; also beds of pebbles chiefly granite, nodules of ferruginous clay, (apparently from lateritic beds,) and kunker.

Voysey states that this river rises in a granitic country, (according to Hamilton, it rises about 43 miles W. from Hyderabad, at the Anantghur pagoda,) and attributes to this cause the circumstance of its not having black alluvium or regur on its banks. (Vide my remarks on the Kistnah in this paper). It may be here stated that the Tumbuddra

\* Madras Journal, July, 1836, p. 199.

has its rise, and course, entirely in a granite country before it passes through the great black soil or *regur* plains of Bellary—whose granite and gneiss are also the principal rocks.

The surface soil from Hyderabad southerly to the Kistnah near Myapore, is generally a reddish alluvium, sometimes more or less sandy, or clayey, according to the prevalence of felspar or quartz in the adjacent rock. It varies from the zero of the bare rock to 12 feet in thickness. Sometimes a bed of kunker, (from 6 inches to 2 feet thick) intervenes between it and the rock; but more frequently the loose gravelly debris of the subjacent granite or gneiss, which is extremely prone to decay on exposure to the air, or to moisture, whether from springs or rivers.

Where subterranean springs exist this bed of Mhurrum, as it is called, is sometimes from 30 to 50 feet thick; but, more commonly, water is found at depths from 6 to 30 ft. Springs impregnated with calcareous or saline matter seem to effect the breaking up of the rock to a greater extent than those of pure water.

Mr. Malcolmson,\* in speaking of this granitic debritus, thus observes: “It has been stated by Dr Christie, that this debris is, at a considerable depth, again consolidated by pressure. In the Edinburgh Journal of Science, 1828-9, this is also mentioned as a fact, common to the rocks of other parts of India. With every respect for his authority, I cannot avoid the conviction, that the inference was founded on imperfect observation, and that it has since been employed in Europe, in support of an ill-founded theory. The ‘Mhurrum’ or gravel found in deepening a well at Bolarum (6 miles from Secunderabad) upwards of 50 feet deep, during the dry season of 1832, is not in the slightest degree consolidated.” “Much of the debris of Secunderabad is, however, consolidated by lime, which is seen to agglutinate the fragments, or to pass in vein-like lines or nodules through the gravel. Occasionally there are only a few fragments of quartz or felspar scattered through the kunker, or they appear to be inserted into the surface.” “The debris is also sometimes united into pulverulent masses, by the oxidation of the iron contained on the sienite; but this takes place at the surface, and seldom acquires any degree of hardness.”

While perfectly coinciding with the general accuracy of my lamented

\* Madras Journal, July 1836, p. 198.

friend's remarks, yet it cannot be denied that great and long continued pressure in general tends to consolidation. That it has not produced this effect on the gravel of some of the deeper wells at Hyderabad is, as Mr. Malcolmson observes, strictly the case, but consolidation has been counteracted in a great measure, by the continual state of moistness in which the debris is kept by the percolation of the spring water in its way upwards and the constant separation and shifting of the particles by water in motion. The temperature of a perennial spring of pure water in the garden of an Arab outside the city walls, I found to be  $80^{\circ}$  Faht. Temp. of air in shade— $89^{\circ}$ .

The temperature of the Bhugga, whence many of the Mahomedan nobles and the Minister Chundoo Lal procure water, was  $79^{\circ} 2'$ . Faht. Temperature of air in shade  $87^{\circ}$ .

The mean temperature of Hyderabad is I believe about  $80^{\circ}$ .—Height above sea by boiling point of water 1702 feet.

On my way to Hyderabad, at Mahanundipet, about 42 miles north of the Kistnah, date, June 4th, 1839, at  $10^{\circ} 15'$  A. M., I witnessed a phenomenon rather rare in this part of India, viz.—an annular solar rainbow. Its *radius*, taken to the inner circle from the sun's centre, was  $22^{\circ} 30'$ . It continued advancing with the sun towards the zenith, but disappeared gradually, before the meridian was attained, at an attitude of about  $75^{\circ}$ .

The sky was lightly veiled with thin grey clouds (*cirri*), amid which the sun shone with a watery light, and defined disc, encircled by four differently coloured, contiguous zones. The prismatic tint of the band nearest the sun was orange, then yellow, pale green, and violet in succession. The united breadth of the four zones amounted to  $38'$ .

The wind was blowing strong and steadily from the west. The thermometer in shade  $80^{\circ}$ . It had been on previous days usually from  $83^{\circ}$  to  $86^{\circ}$  in the shade. At this time the temperature of the open air was  $86^{\circ}$ . All the lunar halos in this country which I have measured have a radius from  $22^{\circ}$  to  $23^{\circ}$ ; and there is, in general, a slight depression in the thermometer at the time of their prevalence.

ON *TEREDO NAVALIS* and a natural defence against its ravages, by Mr.

LEHMANN : from the *Transactions of the Scandinavian Naturalists of Copenhagen*, 1840 ; translated and communicated by Dr. T. CANTOR.

*Teredo Navalis*, an important agent in the economy of nature, is universally known by the damage it inflicts upon the wood work of posts and ships. While accomplishing the intention of nature in destroying decayed wood in the sea, it at the same time attacks ships, bulwarks and the piles of quays. Like all animals intended by nature to clear her stage, the *Teredo* is endowed with immense power of reproduction, and therefore by its numbers becomes more destructive than the largest animals which come in collision with the industry of man. Every museum exhibits specimens of wood perforated by this shell-fish, which lines its abode with lime, in composition similar to that of its shells. But my inquiries as to the length of time required by the animal to perforate the wood, have hitherto been fruitless. Some samples of the works of *Teredines* are here submitted, because I am enabled to attest the age of the artificers. Five years after the posts of bulwarks of Kyholm were erected they appeared in the state now exhibited. From these it will be seen that the *Teredines*, during the said period, have attained to their full size, of more than 12 inches in length, and half an inch in diameter. It may therefore be inferred, that they thrive, and combine quick growth with great multiplication.

The more important the works are, which are attacked by the *Teredo*, and the quicker the destruction is perpetrated, the greater the solicitude which has been exerted to defend the wood, and many applications have been tried, but none have stood proof in the sea. The only remedy hitherto successful, has been to cover the wood with plates of metal, of copper, brass or zinc. But they are too expensive to be used universally, nor are they easily protected.

I believe to have found a defence offered by nature herself, which I therefore recommend to the attention of naturalists. The pilot and light vessel, placed in the North-Sea, in the mouth of the Eider, requires not to be coppered, and, as she has to sail but few miles, is therefore provided with a sheathing of plain boards. The *Teredo* attacks the latter indeed, but cannot penetrate to the sides of the vessel,



as the interval between them and the sheathing is filled with a layer of cow-hairs. The boards of the sheathing are annually repaired or renewed. Last year it was reported that the sheathing required no renewal, "*although*" it was thickly covered with muscles. This circumstance reminded me that I earlier had found no *Teredines* in bulwarks on which muscles (*mytilus edulis*), were fixed, an observation, which I however had not then followed up. At present I have reason to believe, that the sheathing of the pilot-vessel was not attacked, *because* it was covered by muscles. As the latter may easily be bred, they offer a natural defence, of no expense, and may besides be turned to economical account.

The muscle attaches itself to piles by means of the *byssus*, or filaments, and multiplies so readily that its young, if suffered, soon cover the whole surface. In the frith of Apenrade piles have, from time immemorial, been sunk, on purpose for the sake of the muscles, which in the course of four years attain to a length of 3 to 4 inches. They are consumed either in fresh state, or are pickled and exported in large quantities. The smaller muscles are thrown back near the piles to which they soon again attach themselves. The short period in which they will cover a surface, I have had an opportunity of observing, when a new light-vessel was placed near Laessøe in Kattegat. In 6 months her bottom was covered with a thick mass of young muscles, which had tended to impede the speed of the vessel. Two feet square of the mass, submitted to my examination, consisted of several layers of muscles, 2 inches in length, so firmly connected by the *byssus*, that a needle could not pass between them. No single muscle could be detached without the whole mass following.

*Teredo* breeds during the dog-days, the muscle some months earlier. Where the latter has fixed itself, the eggs of the *Teredo* cannot reach the wood, nay, by intercepting the communication with the sea, the muscle will suffocate *Teredines*, which may happen earlier to have found their way into the wood.

At first I supposed the *byssus* might possibly contain something specifically repulsive to the *Teredo*, and I therefore had it submitted to the chemical analysis of Dr. Scharling, which however has not given the result expected. It is the mere mechanical covering of the muscles, which prevents the *Teredo* from reaching the wood.

[The valuable hint contained in Dr. Cantor's communication will doubtless be appreciated by all such as are interested in the protection of wood-work from the attacks of the *Teredo*. Nowhere would this natural opponent of its ravages be more serviceable than in the Hugli; but the *Mytilacea* are, strictly speaking, inhabitants of salt water, although some of the family are capable of being localised in rivers, as is the case with *Dreissina polymorphus*, discovered by Pallas in the Volga, and some species of *Modiola*. The valves of two species of *Mytilus* have occasionally brought to me from the Hugli; one, closely allied to *M. edulis*, but less ventricose, and easily distinguished from it by the cardinal teeth; the other apparently identical with the *M. crenatus* of Lamarck, figured in the *Conchologia Systematica* of Reeves; but as neither of these, nor *Dreissina*, of which I have several specimens, have been found alive, I think their presence altogether accidental; they may have found their way to this river either with ballast or adhering to the bottoms of vessels. *Modiola emarginata*, (Benson,) however, inhabits the water of Tolly's nullah, as I was informed a few weeks ago by its distinguished describer himself. —J. W. L.]

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL,  
APRIL, 1847.

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*Lieut.-Col. FORBES, in the Chair.*

The Proceedings of last meeting were read and adopted.

The accounts and vouchers of the previous month were submitted as usual.

The following gentlemen were then duly elected members of the Society :—

*The Rev. S. Slater.*

*Count Lackersteen.*

*D. Money, Esq. C. S.*

*Lieut. Staples, Bengal Artillery.*

The Senior Secretary communicated the desire of Capt. Jas. Abbott, Boundary Commissioner, Punjab, to rejoin the Society from 1st January, 1847.

The following gentlemen were named as candidates for admission :—

*Capt. J. C. Hanyngton*, 24th N. I. Dep. Com. Chota Nagpore, proposed by Lieut.-Col. Ousely, seconded by Capt. Kittoe.

*Rev. James Thomson*, proposed by Dr. O'Shaughnessy, seconded by Col. Forbes.

*Geo. Udny, Esq. C. S.*, proposed by Lieut.-Col. Forbes, seconded by Dr. O'Shaughnessy.

*R. Thwaites, Esq.* Professor Hoogly College, proposed by Mr. Jones, seconded by Mr. Kerr.

*M. E. Gibelin*, Procureur du Roi a Pondicherry, proposed by Mr. Piddington, seconded by Mr. Laidlay.

*J. R. Logan, Esq.* Singapore, proposed by Dr. O'Shaughnessy, seconded by Mr. Laidlay.

*James Stewart Blakie Scott, Esq.*

*Falconer Chute Sandes, Esq.*

*Warren Hastings Leslie Frith, Esq.*

*Robt. Thomas, Esq.* proposed by Mr. R. W. G. Frith, seconded by Mr. Laidlay.

(Mr. E. Ryan's name was withdrawn from the list of members at his own request.)

Read letters from Capt. Kittoe, forwarding specimens as follows.

To W. B. O'SHAUGHNESSY, *Esq.*

MY DEAR SIR,—I have the pleasure to send a few specimens as per list

|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| 4 Specimens sandstone.    | in the margin. They are trifling but may be useful  |
| 1 of Iron ore.            | till better are supplied.                           |
| 1 of yellow ochre.        |                                                     |
| 1 Garnets?                | The black sand is that in which the gold is found   |
| 2 Rock at Ranchee.        |                                                     |
| 1 Black sand of the Gold. | wherever washed for in the south-western districts. |
| 1 Plumbago?               | The minute specimen resembling plumbago was         |

found together with the sand by Major Armstrong in Singhboom.

The yellow oxide (or ochre) appears to be of a superior kind, and would probably fetch a good price in the English market for yellow paint.

Your's faithfully,

1st April, 1847.

M. KITTOE.

From *Capt. Jas. Abbott*, giving a description of the process of manufacturing the Damask sword blades of *Goojerat*.

From *Sec. to Sup. of Marine* forwarding Meteorological Register for February, from Kyook Phyo.

From *B. Hodgson, Esq.* forwarding a paper on the *Tibetan Badger*, *Taxidea Leucurus*, with plates.

Ditto on the Hispid Hare of Bootan, (with plates.)

From *Capt. James Abbott*, enclosing a drawing of Sculptures dug from the site of the Indo-greek city of Bucephalia on the Hydaspes.

The above papers were directed to be published in the Journal.

From *Syed Yar Ali*, requesting patronage for a work entitled "The Ookburee" a commentary on Arabic poetry. (Referred to the Oriental Section.)

From *Mr. Hodgson*, applying for copies of the Tibetan Grammar and Dictionary of the late Csoma de Koros, for the use of a Native traveller and scholar; offering payment for the same.



Resolved that the books be presented to Mr. Hodgson, with the Society's acknowledgments for the valuable contributions received from him this evening.

From *Capt. Kittoe*, forwarding volcanic specimens from mount Merope, on part of Col. Garstin, Bengal Engineers.

To W. B. O'SHAUGHNESSY, Esq.

MY DEAR SIR,—I beg to forward herewith on the part of Col. Garstin, Engineers, some specimens of substances ejected during the late eruption of Mount Merope in Java, also a piece of Lava from Vesuvius, in which a copper coin is embedded, having been thrown into it whilst in its heated state.

The three specimens from Merope are curious; they are said to be different from what this volcano has hitherto been known to discharge.

The eruption took place on the 2d September last, (1846) commencing at 5 A. M. when it belched forth flames and smoke accompanied with a loud noise—at 6 a shower of ashes commenced falling and continued till midnight; the following day the eruption ceased and the mountain again became at rest.

Col. Garstin begs the Society's acceptance of the specimens.

28th March, 1847.

M. KITTOE.

From *Capt. Kittoe*, forwarding notes on the Temples and Ruins of Domga.

Ditto on the Viharas of Behar.

Ditto on the sculptures of Bodh Gyah.

Ditto on the caves of Barabar, and presenting various Buddhist sculptures and inscriptions from Barabar—and on the part of Col. Onseley an inscription from Mynpat.

It was further proposed by Capt. Kittoe, duly seconded and resolved,

That it should be observed as a rule henceforth that all inscriptions should be rendered in the vernacular, and together with a transcript of them in their original language be printed and a few copies presented on the part of the Society, through the contributors or other channel, to the zemindars, rajas, and priesthood at and near the locality whence obtained.

The following letter from Capt. Kittoe, having been mislaid by that gentleman was recorded for publication.

To W. B. O'SHAUGHNESSY Esq.

*Senr. Secy. Asiatic Society.*

MY DEAR SIR,—Having now seen the supplementary number of the Journal of our Society, I beg to answer the call of members assembled at the May meeting, therein recorded, and offer my opinion on the suggestions of Mr. J. Muir, touching the subject of adopting Hindu and Jain Architecture in designing and building the new Colleges.

I am of opinion that the Hindu or the Buddhist styles, could well be adopted; of the Jain, I can say nothing, not having met with any specimens, except what are given in Tod's work, and too indistinct to copy from; however I would offer a few remarks applicable to any order of architecture, Classic, Gothic, Saracenic, or Indian, &c.

It has ever appeared to me that those races who were sufficiently advanced in civilization to practise architecture and sculpture, had no doubt fixed rules for guidance in their designs; that each had marked peculiarities, and striking dissimilarities, which had only been deviated from in later times, through various causes. The chief of these would seem to have been the result of international intercourse from conquest. The conquerors wishing to establish their own, but with imperfect means of instructing the conquered, who on their side were disinclined to part with their favorite forms.

The blending of one style with another, however skilfully performed and pleasing the effect to the eye of the multitude, is not to be lauded; something ever remains wanting, and offends that of men of taste, of many even who feeling defect to exist, could not point out in what particular; hence I must differ from Mr. Muir, as to his proposal to collect and put together fragments such as those displayed in Tod's Rajastan; indeed, the extreme richness of detail would alone render the copying them impracticable in these times of rigid economy and utilitarianism; we must then look to the most simple forms, of which we have an abundance close to Benares itself, (where one College is about to be built) without borrowing from Rajpootana. I allude to sundry fragments in the city and the vast ruins at Jounpore appropriated by the Mahomedans in early times.

For "Indo-Mahomedan" details my publication on that subject affords ample data; a judicious application of them alone is all that is necessary. I however must here lament my past inability to complete what I began; I intended to have classed each style or stage of this clever compound under a separate head to prevent the architect and builder making those displeasing jumbles of ornamental parts and of other features which are ever and anon perpetrated in the present day, in the works of native architects in particular, such as Saracenic arches springing from lean Corinthian shafts and capitals,

a jumble of rich frieze ornaments and cornices in the place of simple brackets, and the elegant "Chujja" (projecting eaves) and many other absurdities. In fact, Indian architecture in our day, is what ancient English, commonly called "Gothic," was at the period of its decline in the reigns of Elizabeth, and Henry the eighth, nor has any great improvement in this respect taken place in our own time. Much may be attributed to want of knowledge and taste in design; architects, thinking to make up for these defects, by loading the surface with minute ornamental detail; also to false economy in stinting the extent and solidity of the structure; indeed this is the first error, profuse ornament to cover the defect; the next, one which of itself defeats the great object, nay, acts in a reverse ratio. Minute ornament is highly expensive to execute, difficult to protect and to keep in repair, consequently not lasting; therefore to be avoided.

The proportions of Indian buildings differ so greatly from those in European countries, that there is no one style, which would not to some degree require modification, and I see no reasonable objection, provided it be judiciously done.

To give effect to the exterior elevation of a building, domes and cupolas are essential, but these belong rather to Mahomedan works. The pyramidal roofs of Hindu, Jain and Buddhist edifices are heavy, unless made of a costly description, and it must be remembered that we have no pure examples of early domestic buildings to guide us, therefore I entertain the opinion that the Puthan or early Mahomedan would be the best suited, not only from its near approach to the Hindu, but from its simplicity and consequent cheapness of execution, besides its admitting of wider latitude of design.

Were sufficient funds available in any instance, a magnificent edifice in purely Hindn form, could be designed with slight modification of the size of the doors and windows.

Of the Badshahi or later Mogul works, we have so many fine examples, that were funds available there would be nothing to prevent the carrying out of designs which for grandeur would even exceed them, provided good ones be forthcoming. I need hardly add that for this, a thorough knowledge of the subject is essential, which can only be attained by a patient examination of the proportions of the buildings themselves and of their component parts.

In conclusion I would dwell on the fact of their having been regular rules, by which the architects and masons were guided; every part and moulding had its particular name and proportion one towards the other, and the fine combinations we observe were not the result of chance as too often advanced, but of careful design and excellent taste.

30th March, 1847.

M. K.

From the Rev. J. Long forwarding an account of the Temple of Triveni near Hooghly, by David Money, Esq. C. S.

The Secretaries submitted on the part of the Committee of Papers—

A report by Dr. Roer on the proposed publication of the Vedas, favorably supported by the Oriental Section. The Committee propose that the report be adopted—the publication of the Vedas forthwith commenced, on the responsibility of the Oriental Section—that Dr. Roer be appointed *Editor*, subject to the condition of his submitting proofs of the work, both text and commentary, to the Oriental Section, without whose “imprimatur” no portion should be finally sent to press,—further, that the Oriental Section be solicited to favour the Society from time to time with their opinion as to the progress of the work with the view to the subsequent remuneration of Dr. Roer’s labours as editor thereof.

It was agreed, that the Report and illustrative documents be printed and circulated to resident members, and the subject discussed at the next meeting.

The Committee submit two propositions by Capt. Kittoe.

*Military Members, (Subalterns.)*—There are many young officers in the service who would be proud to be considered members of our Society, but can by no means afford the expense. I propose that Subalterns should be admitted upon a reduced (half) monthly subscription, and that they should be excused the entrance donation, binding themselves however to pay the same upon promotion or upon their succeeding to staff employ, general or regimental, after which they will pay the full subscription or retire.

I am confident that by such an arrangement lights would be drawn from under their bushels, and that many would be induced to exertion, for which there is at present no encouragement.

#### MOHUNT OF BODH GYAH.

In return for the civility and attention shown to me in my labours at Bodh Gyah, and with a view to encourage him and his monks to give further aid I propose that through me the Society should present the Mohunt with a copy of the Mahabharut neatly bound.

M. KITTOE.

The first proposition the Committee are not prepared to recommend under the present circumstances in which the financial affairs of the Society are placed.—(Decided accordingly).

The second proposal they submit for the sanction of the Society.—  
(Agreed unanimously).

The Committee have received an application from Mr. Hendrie for the payment of Co.'s Rs. 100, for sundry lithographs stated to have been executed by order of Mr. Blyth. The sketches are good, the charge moderate, and the artist cannot afford to suffer loss by his labour; on these grounds the Committee recommend that the bill be paid, but they desire to record their opinion of the inexpediency of any officer of the Society incurring such expenses without due sanction.—  
(Agreed accordingly).

The Rev. Dr. Hæberlin, a member of the Committee of Papers, being very frequently absent from Calcutta, the Committee recommend that *Baboo Debendernath Tagore*, be appointed a member of the Committee in Mr. Hæberlin's place.

This proposition gave rise to some discussion, Major Marshall insisting that it amounted to the expulsion of Dr. Hæberlin, while the Vice-President and Secretaries declared the sole object of the proposition was as stated, to obtain an efficient colleague constantly at the Presidency and competent to advise the Society on questions connected with Sanscrit literature. The Rev. Mr. Long being referred to, as Dr. Hæberlin's most intimate friend present, said that he was likely to be very often absent. The question having been put to the vote was negatived, the majority of the members present not voting.\*

Copies were submitted of 4 coloured plates executed for the Journal, by Mr. Bennet, in illustration of Mr. Hodgson's papers on the *Ovis Ammonoides*, and *Procapra Picticaudata*, at the cost of Rs. 226 for 4 sets, each of 550 copies: payment of the amount was sanctioned accordingly.

The Committee submitted without comment a further claim by Mrs. Ballin, for Co.'s Rs. 563, 4, for *printing*, 14 sets of the "Burnes" drawings, work stated to have been executed many months since and which was it appears duly authorized by the regular officers of the Society. Bill directed to be paid. The Committee further submitted the cash vouchers and accounts of the total expenditure on the Burnes' and Cantor drawings.

\* Dr. Hæberlin has since written from Dacca confirming Mr. Long's statement in every respect and requesting to have his name removed from the Committee.—*Secs.*



Read the annexed extracts from a letter from M. E. Gibelin, Procureur du Roi a Pondicherry, communicated by Mr. Piddington.

*Pondichéry, 24 Février, 1847.*

MONSIEUR,—Quoique je n'aie pas l'avantage d'être connu de vous, vous avez mis tant d'obligeance à me rendre un service qui vous était demandé pour moi, que je ne puis tarder davantage à vous en adresser tous mes remerciemens.

Pour que vous puissiez juger de l'application que je fais de mes recherches sur la législation hindoue, recherches que vous avez aidées si gracieusement de votre concours, j'ai l'honneur de vous adresser, par le paquebot à vapeur de Madras, un exemplaire d'un premier volume d'Etudes sur le droit hindou, volume dont l'impression vient à peine d'être terminée. Je vous prie de l'accepter comme un témoignage de ma gratitude.

Dans une introduction que j'ai cru devoir placer en tête, j'ai cherché à réunir les principales traditions historiques qui constataient la filiation des peuples chez lesquels se rencontraient aussi les concordances les plus nombreuses et les plus frappantes entre les lois qui les gouvernent et les lois des Hindous.

Dans les Etudes qui suivent, j'ai cherché à établir, par la comparaison des textes, ces mêmes concordances législatives. Mon but a été, par ces rapprochements, de faire mieux apprécier la loi primitive que nous avons à appliquer ici chaque jour, de mieux pénétrer son esprit, et de pouvoir la discuter alors, avec cette connaissance plus intime, comme nous discutons les lois de notre Europe, qui ne sont, ainsi que je crois avoir commencé à le démontrer, que les traditions de cette même loi.

Il y a donc dans mon travail, ou du moins c'est-ce que je me suis proposé, deux objets distincts, l'un d'études historiques, l'autre d'études pratiques ou d'application journalière. Suis-je parvenu, de près ou de loin, à m'approcher du but que je désirais atteindre ? C'est-ce que je vous prierais de vouloir bien examiner. Je m'estimerais heureux si vous aviez la complaisance de vous en expliquer franchement avec moi. J'ai encore une route assez longue à parcourir : je puis rectifier des erreurs, modifier des méthodes défectueuses. Aidé de l'expérience, des lumières d'hommes plus versés que moi dans la connaissance des lois du pays, je puis améliorer mon œuvre en la terminant.

Il aurait été bien avantageux pour moi, si j'avais pu m'étayer de tout ce que vos grands Jurisconsultes, les William Jones, les Colebrooke, ont laissé consigné dans les intéressants recueils de vos Recherches Asiatiques. Peut-être me sera-t-il permis quelque jour, d'aller consulter, à Calcutta même, et leurs écrits et leurs dignes successeurs, dépositaires et continuateurs de leur

science. En attendant, . . . veuillez agréer l'expression des sentiments de haute considération, avec lesquels je suis,

Monsieur

Votre très humble

et très obéissant serviteur

(Signed) E. GIBELIN,

*Procureur général, Chef de l'administration de la Justice à Pondichéry.*

Mr. Piddington stated in reference to the highly interesting work of Mr. Gibelin noticed in the presentation, that while Sub-Secretary he had furnished that gentleman at his request and expense with copies of some rare Sanscrit works.

*Zoological Department.*

*Mr. Piddington* read the subjoined note, giving

*An account of a Volcanic Island off the Coast of Coromandel, from the Annual Register, Vol. 1st, 1758.*

I find the following highly curious paper in the *Annual Register*, and it has undoubtedly escaped the notice of all the writers on Indian and on general Geology, though clearly allied to the phenomena of the same kind which have appeared in the western hemisphere as Sabrina off the Azores, and Graham's Island in the Mediterranean, in our own days. The time at which it occurred is also remarkable as being the epoch which from the great earthquake at Lisbon in 1755, to 1767, may be called an earthquake epoch all over the world.

As connected also with the Volcanic action on the opposite shores and islands of the Bay and within the Andaman sea, this last recorded eruption on the Indian shore is highly interesting. Capt. Halsted's account (in Vol. X. of the Journal) of the upheavement of Cheduba, would place that event in 1749 but we may not improbably suppose that his aged informant might have mistaken his age, as natives of the east usually do. There is no shoal now near enough to Pondicherry to allow us to suppose it the remains of this remarkable Island, and at three leagues distant from the coast there 40 or 50 fathoms are found, so that it may have easily subsided into deep water. The shoal seen by H. M. S. *Melville* (Goris Bank) was in a line joining Pondicherry and Chittagong, and a shoal noted on a chart in my possession which belonged to the late Mr. Greenlaw, as having been seen by an American ship, is close on the line joining Pondicherry and Cheduba. Both these may have been a partial upheavement in this line.

The following remarkable account is given by an officer on board a French East-Indiaman, in a letter to a friend at the Hague :—

Jan. 20th, 1757.

“Just before we sailed from Pondicherry, fires broke out on the surface of the sea three leagues from that place, with the utmost impetuosity, throwing up pumicestones, and other combustibles, and forming an island of a league long and of the same breadth, which increased to a considerable height, with a volcano, making a most hideous noise, like thunder, or great guns, and a cloud proceeding from it, breaking into small rain of sand instead of water. This prodigy was first seen by a ship's crew belonging to Pondicherry, who thought at first it had been a water-spout ; but coming near it, saw a prodigious flashing of fire, which smelt of brimstone, and heard a most astonishing noise ; afterwards a vast quantity of fish was perceived dead on the sea, and appeared broiled. Sailing a little further, they met with such quantities of pumice stones, that it was hardly possible to make way through them ; at the same time they discerned land, but it appeared to them as a cloud of fire and smoke on the surface of the sea, and the cloud ascending into the air, distilled in showers of rain which brought abundance of sand on their ship's deck ; and being nigh the flashes of fire, and hearing the noise, they were under great consternation ; but it pleased God to send them a little breeze of wind that brought them from it. Another ship sailed round it, and they were so becalmed, that the ashes proceeding from the vast fire fell on their deck, and they were in great danger of being burnt.”

Mr. Piddington next submitted his usual report on the *Museum of Economic Geology*.

*Museum of Economic Geology.*

We have received from D. Money, Esq. C. S. a brick from Egypt, of which he says :—

“The brick from Thebes was from one of the oldest ruins on the western side of the hill near Madinet Aboo. It had a cartouche which could not be decyphered, but which, as well as the ruin from which it was taken, was a proof of its great antiquity ; some bricks near the spot have been found with the cartouche of Thothmes 2d and Thothmes 3d on them. It was curious too from its size and weight,

and was unburnt and mixed with chipped straw and was most probably of the *same kind*, though it may not have been the same, which the Israelites were forced to make. I thought, under such circumstances, it might have a slight value in the rooms of the Asiatic Society."

I have added to the collection of soils a very rare one here, the brick red soil of Bermuda, obtained from the lower part of a box of plants sent to me from that Island.

To the division of building and ornamental materials I have also added specimens of the common grey and the yellow Chunar sandstones, and of two kinds of trap, grey and buff-coloured, sent to the Auckland Testimonial Committee from Bombay.

#### *Geological and Mineralogical collections.*

I have several contributions in both departments, but they have unfortunately only come in too late to be examined (which many of the specimens require) before reporting on them, and I have other work in hand in the laboratory.

We have received from Colonel Ouseley a specimen of Fibrous Carbonate of Lime obtained in the district of Nagpore, under the following circumstances detailed by him.—“Near where I was encamped, is a village named Rutha, with a hill of considerable height called ‘Raj-poorā;’ a land slip took place the rains before last, and a small stream emerged from the bottom of the slip. In this, and in a great chasm, these stones are found; they are to be had in any quantity.”

As above stated the specimen is a very common mineral, but its matrix is curious as approaching more nearly to an impure chalk than any thing we usually meet with in India. I sent a small sample to Dr. Cantor, requesting he would examine it for infusoriæ, but he informs me it does not contain any.

I am enabled to fill up a blank in our Mineralogical collection by a specimen of Atacamite, which (and this is an instance of how frequently valuable specimens are lost in India even in the hands of those who know their value), I found amongst a number of refuse and common minerals from my own collections.

We have to acknowledge also from E. Lindstedt, Esq. a fossil fruit (siliceous) from the coast of Abyssinia, of which the following is the memorandum furnished by Capt. Hodges to him:—“The stone I gave

you was picked up by me on the sea beach of the Island of Massouah, on the coast of Abyssinia, in the month of May, 1846." The specimen was exhibited at the last meeting.

### Zoological Department.

Mr. Blyth read his report on the progress of the Zoological department.

The following are the only donations which I have to bring under notice this evening.

1. From E. O'Ryley, Esq. of Amherst, portions of two skeletons, with the skulls of *Rhinoceros Sumatrensis*; one of these skulls belonging to the individual, the skin of whose head was lately forwarded by Mr. O'Ryley.

Also a collection of bird-skins, comprising *Crypsirina varians* (v. *Phrenothrix temia*, Horsf.) and other species of interest: and

A small living Turtle, of the species *Chelonia virgata*—the edible turtle of the Bay of Bengal.

2. From Capt. Beaumont, a very fine recent specimen, with a jet-black hood, of *Larus ichthyæetus*, Pallas.

3. From J. McLeod, Esq. A fish, taken near the equator, which is a *Monoacanthus*, apparently the *Balistes lævis* of Shaw.

Also two species of *Phyllosomata*, some *Acalepha*, and other specimens obtained on the same occasion.

4. From Capt. R. Rollo, 50th Madras N. I., a skin of *Anthropsides virgo*.

5. J. B. Villy, Esq. A pair of living Doves, of the species *Geopelia tranquilla*, Gould, from Australia.

6. J. B. Porter, Esq. A dead Pheasant, from Shanghai, the *Phasianus torquatus*, or common ring-necked Pheasant of China.

The fine collections of mounted specimens upon the table, prepared since the last meeting, do not call for any particular remark.

April 7th, 1847.

Books received for the Meeting of Wednesday, the 7th April, 1847.

### PRESENTED.

Meteorological Register for February, 1847.—FROM THE SURVEYOR GENERAL'S OFFICE.

Ditto ditto, kept at Kyook Phyoo during February, 1847.—BY THE SUPERINTENDENT OF MARINE.

The Calcutta Christian Observer for April, 1847.—BY THE EDITORS.

La Rhétorique des Nations Musulmanes d'après le traité Persan, intitulé Hadayik ul Balagat, par M. Garcin de Tassy.—BY THE AUTHOR.



Le Moniteur des Indes Orientales et Occidentales, No. 9.—BY THE EDITORS.

Etudes sur le droit civil des Hindous ; Recherches de législation comparée sur les Lois de l'Inde, les lois L'Athenes et de Rome, et les coutumes des Germains ; par E. Gibelin.—BY THE AUTHOR.

EXCHANGED.

The London, Edinburgh, and Dublin Philosophical Magazine, No. 198.

Journal Asiatique, quatrieme serie, Vol. VIII. No. 38.

Calcutta Journal of Natural History, No. 28.

PURCHASED.

The Calcutta Review, No. XIII.

The Annals and Magazine of Natural History, Nos. 122—3.

Journal des Savans, Novembre, 1846.

DONATIONS TO THE MUSEUM.

Two Duffla Caps.

A quiver with two poisoned arrows ; and a Knapsack.—BY H. DRIVER, Esq.

For all donations to the Library and Museum as well as contributions to the Journal, the thanks of the Society were directed to be offered by the Secretaries in the usual form.

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# REPORT ON THE “VEDAS.”

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## ASIATIC SOCIETY.

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### PROPOSED PUBLICATION OF THE VEDAS.

In compliance with a Resolution passed at a general meeting of the Asiatic Society held on the 6th April, 1847, the Committee of Papers circulate for the information of the resident members, the annexed documents, chiefly communicated by the “*Oriental Section*” of the Society, relative to the proposed publication of the Vedas.

The expense of the undertaking is to be defrayed from the grant of 500 Rs. per mensem, allowed to the Society by the Hon'ble Court of Directors, for the promotion of Oriental literature.

The Committee of Papers propose that the views advanced in Dr. Roer's report, supported by the Oriental Section, be adopted by the Society on the responsibility of that section—that Pundits from Benares be engaged—that Dr. Roer be appointed Editor, under the supervision of the Oriental section, by whom all proof sheets should be examined and passed before finally sent to press—lastly, that the section be invited to report progress from time to time, and that after six months the question be entertained of the manner in which Dr. Roer's labours may be duly remunerated.

The above propositions will be discussed at the regular meeting of the first Wednesday in May.

W. B. O'SHAUGHNESSY,

April 12th, 1847.

Sen. Sec. Asiatic Society.

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*Asiatic Society of Bengal.*

G. A. BUSHBY, ESQ.

W. JACKSON, ESQ.

BABOO DEBENDERNATH TAGORE.

BABOO HURREE MOHUN SEN.

GENTLEMEN,—I have the honor to inform you that you are solicited by the Asiatic Society of Bengal to afford them, through the

Committee of Papers, your valuable aid, as additional members of the section appointed for advice and reference to, on

“ORIENTAL LITERATURE AND PHILOLOGY.”\*

Of this section Dr. E. Roer is the Secretary, and he will from time to time circulate for your examination all papers and documents upon which the Asiatic Society may desire the benefit of your suggestions.

The members of the several sections being appointed by the Society as ex-officio inspectors of the Museums and Library in their several departments, your co-operation in this respect is most earnestly invited, and any aid or advice you may be pleased to afford for the improvement or increased efficiency of these branches of the Society's establishment, will be received with the utmost thankfulness and respect.

In deference to the expressed wishes of the Honourable the Court of Directors, reiterated in Mr. Secretary Bushby's letter, dated the 21st November, 1846, the Asiatic Society are desirous of taking immediate measures for the publication of the *Vedas*, with a commentary, the expense to be defrayed from the grant from Government of 500 Rs. per mensem for “Oriental Publications.” Your Secretary, Dr. Roer, will be requested to obtain for the Society, at the earliest possible period, such suggestions as your section may be pleased to communicate on this important subject.

I have the honor to be,

Gentlemen,

Your most Obedt. Servt.

W. B. O'SHAUGHNESSY,

*Asiatic Society, 16th Feb. 1847.*

*Sen. Sec. Asiatic Society.*

*Asiatic Society, the 30th March, 1847.*

GENTLEMEN,—In compliance with the request expressed in the Senior Secretary's letter of the 16th ult., addressed to the Oriental Section of the Society, I have the honour to submit to you, for your consideration, a few suggestions respecting the publication of the *Vedas*, and request the favour of your able advice for the guidance of the Society in this important undertaking.

\* Former members :—Major Marshall, since resigned.—The Rev. Dr. Hæberlin—The Rev. Mr. Long.

Before I can, however, enter upon the proposition of a plan, according to which, I believe, we may commence the printing of the Vedas, it is imperative upon me to advert to some of the difficulties, connected with this work, as its success depends upon a correct estimate of the nature of these difficulties. For this purpose I beg to lay before you the accompanying letters, in which these difficulties are represented in a very strong light, and seemingly, for the present at least, unsurmountable. I believe, however, that all the impediments may be overcome, and as readily now as at any future time.

The difficulties are chiefly of two kinds, the collection of the Vedas and the understanding of the language of the same, as this last is essential to the correctness of the text.

Permit me to solicit your attention first to the former difficulty.

It has been insisted on in the letters before you, or I should not have ventured to detain you so long on this subject, that the language of the Vedas is antiquated and obsolete, and for this reason not intelligible without the assistance of Pundits who have studied the Vedas at Benares. I will not urge against this assertion, that some literary undertakings have been successfully completed of infinitely greater difficulty than the present, for instance to give a near and illustrious example, that the characters of the legends on the Bactrian coins, for which there was no living interpreter, have been deciphered, that the language of these legends, of which there are no other documents, and which has long ago died away, has been fully understood by study, perseverance and genius; but I would urge with regard to the Vedas themselves facts which cannot be controverted, that parts of these Vedas have been published, and with eminent success, without the assistance of any Pundit, by European scholars; I mean the *Sanhita* of the *Sāmaveda*, by the Rev. Mr. Stephenson, and part of the *Sānhita* of the *Rigveda* by the late Professor Rosen in London, the text in both cases accompanied by a translation. This success ought then to be a guarantee of our own success, if we have only perseverance enough, and use the means at our command.

These means are first, the very works just mentioned, by which the study and understanding of the Vedas is considerably facilitated, especially by Rosen's work, which is a mine of information with regard to the correct interpretation of the Vedas. In his notes all obsolete forms of



the language, occurring in the text, are explained, and reference is made to the interpretation of the same by ancient works of the Hindus.

Secondly, the language of the Vedas in its grammar is explained by Pāṇini and other Hindu authors on Sanscrit grammars, especially by Bhattogi Dixita in the Siddhānta Kāumudī, the works of whom are partly printed and commented upon. The edition of Pāṇini by Boethlinck will give all the assistance that is required, completely to understand the grammatical forms peculiar to the Vedas. Further, the language of the Vedas with regard to its style is simple, and in this respect easy; there are no unusual combinations of words; the language of the Saṁhitās (to which I here only refer, as it is the most difficult part) is that of prayer, connected with the daily routine of life. The only difficulty consists in the occasional want of the connexion of the ideas. This difficulty, however, is not of frequent occurrence, and will be removed by an attentive perusal of the whole prayer in which such passages occur.

Thirdly, we have those commentaries of the Vedas which, from the most ancient times until now, have been acknowledged as guides in the interpretation of the Vedas. These commentaries give a full explanation of the peculiar grammatical forms and obsolete words as well as of the sense, when it is obscure, or when allusions are made to usages and customs which disappeared at a later period, or they supply omissions in the text. They are at the same time not written in the dialect of the Vedas, but in a language which every one, acquainted with the Sanscrit, can understand.

On these grounds I consider any objection, raised upon the ancient form of the language against the publication of the Vedas, as of no weight whatever. By study, application and perseverance, which are required for the execution of every important literary undertaking, they will assuredly be overcome.

The second difficulty is to procure a complete copy of the Vedas.

There is no complete copy of the same in Calcutta, and also not at Benares, as appears from a statement of Mr. Muir which I have added to this Report. There are, however, considerable portions of them here, and still more at Benares, and judging from what we already possess we have every reason to expect, that we shall be able to complete

our collections in India, especially, if we follow Raja Radhakant's advice to apply for them in the Dekhan (Tailinga, Dravirha, &c.).

Should we, however, fail in this, there is, as Colebrooke states in his *Essay on the Vedas*; and as is alluded to in Raja Radhakant's letter, a complete copy of the Vedas in London, brought there by Col. Polier. It is greatly to be lamented, that we have no catalogue of the Vedaic MSS. in the Library of the East India House. These collections must, however, be extensive, and we may confidently hope, that the Directors will open to us the resources of their Library for a publication of the Vedas.

If we have then grounds to believe that we may obtain a complete collection of the Vedas (and also of a commentary of the same), are we to delay the publication of them, until this collection is completed? I think not. To wait for this, is to postpone the publication to an indefinite period, nay, to decline it altogether. The commencement once made, we shall obtain assistance from many quarters in Europe as well as in India. If we do not commence, the public will withhold their aid in the belief, that our present intention of publishing contains as little meaning, as it has displayed for the last five years, during which time we have received the handsome grant of 500 Rs. per mensem, on the part of the Directors, to be expended for this particular purpose.

I therefore suggest, that the publication of the Vedas should be commenced without further delay, provided that the MSS. at our command suffice (as I think they do) to print a considerable portion of these works together with a commentary, and secondly, that, while the printing is going on, we increase and complete our collections here, and if necessary, in Europe.

To make myself understood with regard to the mode of the publication of the Vedas that I propose, I must premise a remark on the division of the Vedas.

There are, as is well known, Four Vedas, each consisting of two parts; the first is called *Saṁhita*, and contains a collection of *Mantras*, or prayers directed to different gods, invocations and incantations. The second part of each Veda is called *Brāhmaṇa*, and contains precepts, moral maxims, explanation of religious ceremonies, &c.

I have now obtained in Calcutta four complete MSS. of the *Saṁhita* of the *Rig Veda* (the first Veda) and a commentary on the first

book of this Sanhita (the whole Sanhita contains 8 books), and on a part of the second book. These are precisely those parts with which we ought to commence, if we would publish the Vedas in the same order, in which they are received by the Hindus, and although it would be a hazardous undertaking to publish the text of the Vedas from one MS. alone, however correct it may be, four MSS. are quite sufficient to prepare a correct text. Rosen had only two MSS., and the commentary, and the text he has given, are unexceptionable as regards correctness. There are no different versions of the Vedas, as there are for instance of the Rāmāyana, they have been handed down to posterity with the utmost fidelity, since an alteration of them would appear to be a sacrilege, moreover the number of verses is known, nay even that of the single words. On these grounds it is evident, that an error, occurring in the text, can be only an error of the copyist, which can easily be rectified by the means of four MSS. I now enumerate these MSS.

1. MS. No. 8—36, A. from the Library of Bishop's College. This is in Debnagri characters, in small leaves, each of them numbered, and the number of Slokas, as also their division in lectures and books, most carefully marked. It is probably a pretty old copy, as the characters differ from those at present in use, and require some attention to read them. It is altogether a beautiful MS., and as I have reason to believe from a comparison of some parts with Rosen's Rig Veda, a very correct transcript.

2. MS. No. 433, from the Library of the Asiatic Society, containing the Sanhita of the Rig Veda complete. It is also in Debnagri character, and legible, although not to be compared in this respect with the MS. from Bishop's College.

3. MS. Nos. 1418—1425, from the Sanscrit College, in Debnagri character. This is also a complete transcript of the Sanhita of the Rig Veda, and in most perfect preservation. It is as good a copy as that from Bishop's College, and in modern character.

4. MS. No. 1417, from the Sanscrit College, containing all the Padas or single words of the Rig Veda, it is in modern Debnagri character, and copied with great attention. The Padas or words are separated from each other by perpendicular lines, which is of material assistance in the interpretation of the text. In Sanscrit many words are often

combined into one, so that if an error should occur in the combination, it is often difficult to find out the incorrect words, while in a succession of Padas the error is directly limited to a single word. At the same time there is a prejudice in favour of the correctness of the text, as great attention is directed to the correctness of each single word by the contrivance of the lines of demarcation.

Beside these MSS. of the whole Sanhita, there is in one more for the first book accompanying the commentary of Mádhav Áchárya.

We have no complete commentary on this Sanhita in Calcutta. Our library possesses the commentary of Mádhaváchárya on the first book of the Sanhita, (No. 17,) and the Library of the Sanscrit College the same on a part of the second book (No 1431).

After these remarks then I propose, that the whole Sanhita of the Rig Veda should be prepared for the press, and printed as far as the commentary goes. During this time we shall have opportunity to procure the remaining portion of the commentary from Benares. With regard to the commentary itself I have further to suggest, that it should be abbreviated in such places, where no explanation is necessary, and that especially such parts of the commentary which explain passages, already before commented upon, should be entirely omitted, as a reference to the place, where they are already explained, will be quite sufficient.

With the aid of the commentary the text of the Vedas can be easily understood, and thus will this most ancient record of the religious traditions of the Hindus for the first time be opened to them, but to afford access to the work to the European public also, I beg to suggest, that the text of the Sanhitas at least, should be accompanied by an English translation. There follows no necessity to translate also the commentary, as the English text may be understood by itself. With regard to the Bráhmaṇas I would not advise a translation, because the cost of the work would be considerably increased, and extracts, judiciously selected, will suffice.

For the collation of the MSS., the copying of the text and preparing of the work for the press, I propose, that the Society should employ, beside their own Pundit, two or three more, under the superintendence of the person whom the Society may entrust with the publication of the work. At the same time the Society should employ,

according to the suggestion of Baboo Debendernath Tagore, a Pundit who has made the study of the Vedas, and especially of the Rig Veda, the business of his life; such a person must, however, not be allowed to exercise any authority, but only to be an assistant, as the word of Pundits in the difficulties of translation or interpretation cannot be relied upon. If the Tattwabodhini Society can lend us the assistance of one of the young men, studying now on the part of that Society the Vedas at Benares, as is kindly intimated in Baboo Nrendernath's letter, we ought of course gratefully to accept this offer; but if there is a prospect of much delay in the arrival of the person, we ought to write to Benares at once for a qualified Pundit.

Should the Oriental Section approve of the propositions laid before them, the undertaking might be at once commenced with the collation of the MSS., and preparing the text and commentary (as far as we possess the latter) for the press. Meanwhile we should look about for the remainder of the commentary on Sanhita of the Rig Veda.

I have not adverted here to the other portions of the Vedas extant in Calcutta, because, according to the examination I have as yet made, none are sufficiently complete to authorize the printing of them, and because I have been anxious to lay before the Society a statement of those portions of which the publication might immediately be commenced. I shall, however, as soon as my time will permit, report on the other parts of the Vedas and on the measures we have to take to complete our collections.

I have the honor to be,

Gentlemen,

Your most Obedt. Servt.

E. ROER,

*Co-Secretary, Asiatic Society, Oriental Department.*

To E. ROER, Esq.

*Co-Secretary, Asiatic Society, Oriental Department.*

SIR,—I have the honor to acknowledge the receipt of your letter of the 24th ultimo, and in reply thereto to inform you that the Society has no complete collections of the Vedas in their library, the only portions of them which are at present in their possession being those which usually go by the name of Dasopanishad, or the ten Upanishads, and



another called the Swetwássatáro with commentaries by Sankara Áchárya. The Society however had deputed four young bráhmans of our country to study all the Vedas in that head-quarters of Vedaic study and common resort of Vedaic students in India, Benares. They have already proceeded far in their tasks, and I believe whenever they return with complete copies of the Vedas, the Society will be glad to lend, through their medium assistance to the Asiatic Society in their very important and valuable undertaking.

I have the honor to be,

Sir,

Your most Obedt. Servt.

NREPENDERNAUTH TAGORE,

*Secretary.*

*Calcutta, Tuttobodhinee Subha,  
8th March, 1847.*

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*To E. ROER, ESQ.*

*Co-Secretary, Asiatic Society, Oriental Department.*

SIR,—I have the honor to acknowledge the receipt of your letter, dated the 24th ultimo, and in reply thereto beg leave to inform you that I have no collection of the Vedas or fragments of them in my possession. I believe that complete copies of them are not at all procurable in Calcutta, the only portions of them obtainable and studied in Bengal being the ten Wupunishadas. I am however of opinion that though complete collections of the Vedas be obtained, yet on account of errors which invariably creep into manuscripts and the difficulty here experienced of getting men who can understand the Vedas, the language in which they and even many of their commentaries are couched being obscure, antiquated and obsolete, the assistance, in the intended publication, of Vedaic Pundits who have studied them regularly as scholars, ought to be procured from Benares; a step which I think is essential to the satisfactory execution of that important undertaking of the Asiatic Society.

I have the honor to be,

Sir,

Your most Obedt. Servt.

*6th March, 1847.*

DEBENDERNATH TAGORE.



To Dr. E. ROER,

*Secretary, Oriental Department.*

SIR,—I am exceedingly happy to learn from your kind letter of the 24th instant, that the Asiatic Society has resolved to publish the Vedas, together with a Commentary, as soon as practicable, and shall not fail to render my assistance in this important undertaking, as far as it lies in my power. Allow me however, to remark that the printing of the Vedas is not an easy task, for a correct and complete Manuscript of the sacred works are scarcely procurable here, and the Pundits of Bengal being not conversant with the Vedas, are hardly competent to correct the proof sheets of the same. I therefore, propose that the Society would be pleased to apply to Government, to write to their Agents at Benares and the Decan, (Tailanga, Dravīḍa, &c.) for transmission of accurate copies of the four Vedas with their commentaries, and also four brāhmins well versed in the four Vedas ; and then I doubt not, the resolution of the Society will be crowned with success.

On reference to the printed list of Sanscrit Books, which was some time ago published by the Asiatic Society, I find that all the Vedas and their commentaries are in the library of the Government Sanscrit College, and can easily be had by writing to the Secretary of the College.

A writer in the *Calcutta Review* (No. V. p. 108) states that a complete copy of the Vedas was carried to England by Colonel Polier, and deposited in the British Museum ; I think it would be highly desirable to get the loan of this original Manuscript, or in default thereof, a transcript of it, for a collation of the different manuscripts that might be procured, either in India or Europe, would be of infinite service in giving a correct and perfect edition of this most ancient work to be found in any language in the world, and that the Asiatic Society of Bengal, or the supreme Government of India ought not to grudge any expense in effecting this most laudable object.

I am much obliged by your bringing to my notice, that Mr. Koenig has requested the intercession of the Asiatic Society, to procure for him one or two copies of my Sanscrit Dictionary, and that he has with great liberality, placed at my disposal, a copy of all the Sanscrit works published by him, as well as by your extracting a passage from a letter of the most erudite and profound Sanscrit scholar, Professor Lassen, to

your address with regard to my Dictionary. I beg to assure you that nothing would afford me more satisfaction than to meet the wishes of those learned gentlemen. I shall do myself the pleasure of forwarding to you after our holidays, two sets of my Lexicon, (of which five volumes have already been issued from the press,) and hope you will have the goodness to despatch them with my compliments, for the acceptance of those two gentlemen.

I take this opportunity to inform you that Dr. H. H. Wilson wrote to me, that the emperor of Russia had agreed to pay the expense of printing a complete edition of the Rig Veda with the commentary of Sáyana Achárya, and that the first book of the Sanhita of the Rig Veda has already been published with an English translation, by a gentleman at Bombay. I have also seen the text of the Sáma Veda Sanhita, with a translation of it, by Dr. Stevenson of Bombay, printed for the Oriental Translation Fund of Great Britain and Ireland.

I have the honor to be,

Sir,

Your most Obedt. Servt.

RADHAKANT.

Calcutta, 29th Feb. 1847.

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TO DR. W. B. O'SHAUGHNESSY.

*Sen. Sec. Asiatic Society.*

SIR,—With reference to the question whether the Vedas should be printed under the superintendence of Pundits of this country or of Benares, I beg to state that Pundits from Benares ought to be preferred to those of this country, for the following reasons :—

1st. The Pundits of Benares make the Vedas the special subject of their studies, and are consequently the fittest persons to edit them.

2nd. The ancient dialect in which the Vedas are composed, is extremely difficult and obscure. It is impossible to find two consecutive lines of a Vedaic Sanhita, in which there is not some obsolete word, some antiquated form of construction or some unusual inflexion; so that without a knowledge of the *Niructa* and *Bhasya*, no Pundit however well versed in modern Sanserita literature can understand the Sanhitas.

3rd. The fact of there being no Vedaic school in all Bengal is well known, and therefore it cannot be expected that men educated in the Sanscrita schools of Bengal shall possess competency for the creditable execution of this important undertaking.

4th. All the Vedaic MSS. that I have seen are more or less defective, and it is impossible to produce a good edition of the work by the mere collation of those manuscripts, and by adopting such expressions out of the different "readings" that will occur in the various manuscripts that may be consulted, and deciding in all other questions of doubt, by the impulse of our own taste and predilections without consulting those who are best able to pass opinions on the subject.

5th. There being no difficulty about getting aid from Benares, I see no reason why the work should be entrusted to parties, who possess no special knowledge of the Vedas in preference to those who have devoted their lives to their study. I take this opportunity, further most respectfully to suggest that it is desirable that there should be a Committee appointed of men well conversant with the Sanscrita literature, to superintend the publication and co-operate with the Pundits who are to edit the Vedas, in collating and revising the manuscripts, so that there be sufficient guarantee for the authenticity, correctness and faithful execution of the task.

I am, Sir,

Your most Obedt. Servt.

RAJENDRALAL MITTRA,

*Assist. Sec. & Librarian, Asiatic Society.*

*April 7th, 1847.*

As four complete manuscripts of the Rigveda Sunghita have been procured, I think there exists no objection as to the commencement of the undertaking as proposed. With a view however to the satisfactory execution of the task, I would propose that no time should be lost in taking measures for the purpose of obtaining the services of a Pundit thoroughly versed in the Vedaic literature.

Agreed.

D. N. TAGORE.

J. LONG.

Dr. Roer's valuable suggestions with those to which he refers in his letter, should, I think, be recommended to the Committee of Papers.

G. A. BUSHBY.

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I think Dr. Roer's suggestions, to commence the publication of the first Ved with an English Translation, a very good one, and would adopt it ; probably many Hindus will read it in an English Translation, who could not in the original. It is very desirable to bring these old books within the easy reach of men's minds.

WELBY JACKSON.

*Statement of the Portions of the Vedas and their Commentaries which exist at Benares, communicated by*  
*J. MUIR, Esq. Civil Service, 1846.*

| Name of Veda.     | Name of Sākhā.                                        | Name & Extent of Mantra Sanhita in Slokes. | Name and Extent of Brahman. | Name of Commentator or Bhāṣiyakār. | Extent of Commentary or Bhāṣiya. | REMARKS.                                                                                                                                                                                                                                                                                                                                          |
|-------------------|-------------------------------------------------------|--------------------------------------------|-----------------------------|------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rik.....          | 1 Sākal, .....                                        | 12,000                                     | 5,000 in 8 Panjikas.        | On Sanhitā, Mādhanva's.            | 1,00,000                         | { Benares S. C. Library has the Sanhitā of this Sākhā complete 12,000 Slokes, and 77,000 Slokes of Mādhanva's Commentary. It has also 4,250 Slokes of the Brahman but no Commentary on it.                                                                                                                                                        |
| "                 | 2 Baskal, ....                                        | 12,000                                     | each 5,000                  | On Brahman, Vid-yāranya's.         | 20,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | 3 Sankhayan, ..                                       | each 12,000                                | each 5,000                  | Unknown.                           | ..                               | { I have not heard of any one in Benares, who read these 2 Sākhās Nos. 2 & 3.                                                                                                                                                                                                                                                                     |
| White Yajush,     | 1 Mādhyandinee,                                       | Vājasunehee 4,000                          | Shatpath 14 kands, 24,000   | On Sanhitā, Mahidhar S.            | 12,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | 2 Kānwī, (differs from the former),                   | 4,000                                      | 24,000                      | On Sanhitā, Ubat's.                | 15,000                           | { Coll. Lib. has the Vājasunehee Sanhitā entire 4,000 sl. Ubat's Bhāṣya on the Sanhitā 10,000 and Mahidhar's Bhāṣya on 4,000 sl. nearly half, 22,300 sl. also the Brahman (14 kands) 24,000; also Harihara Swāmī's Bhāṣya on the 1st känd of the Brahman 4,200, and Mādhanva's Bhāṣya, on one division, and part of another of the Brahman 9,600. |
| Black ditto, .... | Taittirīya, ....                                      | Apastambī 9,000                            | 5,000                       | On Sanhitā, Mādhanva's.            | 12,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | 2 Kānwī, (differs from the former),                   | 4,000                                      | 24,000                      | On Brahman, Vid-yāranya's.         | 55,000                           | { Coll. Library has 1st half of the Sanhitā of the Kānwī Sākhā, 2,000 and a small part of Vrihadaranyaka känd of the Brahman of this Sākhā 1,700.                                                                                                                                                                                                 |
| "                 | Taittirīya, ....                                      | Apastambī 9,000                            | 5,000                       | On Sanhitā, Mādhanva's.            | 30,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | Chāndasī or 1st part of Uttara Sanhita or 2d part, .. | 2,000                                      | 8,000                       | On Brahman, Vid-yāranya's.         | 15,000                           | { Library has part of the middle känd (there are 7 kands in all) 2,200 but no Brahman.                                                                                                                                                                                                                                                            |
| "                 | Chāndasī or 1st part of Uttara Sanhita or 2d part, .. | 2,000                                      | 8,000                       | On Brahman, Vid-yāranya's.         | 16,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | Chāndasī or 1st part of Uttara Sanhita or 2d part, .. | 2,000                                      | 8,000                       | On Brahman, Vid-yāranya's.         | 25,000                           | { College Library has Chāndasī Sanhitā 2,000, Mādhanva's Bhāṣya on ditto 10,900, Brahman consisting of six Upanishads 4,600.                                                                                                                                                                                                                      |
| "                 | Chāndasī or 1st part of Uttara Sanhita or 2d part, .. | 2,000                                      | 8,000                       | On Brahman, Vid-yāranya's.         | ..                               |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | Rāvāyanī, ....                                        | ..                                         | ..                          | ..                                 | ..                               | { No one known in Benares who recites this Sākhā, which differs in accentuation only from the Kauthumī. The Brahman is said to be different, the size the same.                                                                                                                                                                                   |
| "                 | Rāvāyanī, ....                                        | ..                                         | ..                          | ..                                 | ..                               |                                                                                                                                                                                                                                                                                                                                                   |
| Aitharvan, ....   | Saunakī, .....                                        | 10,000                                     | Gopath 6,000                | On Sanhitā, Mādhanva's.            | 80,000                           | { College Library has this Sanhitā 6,000 and part of the Gopath Brahman 1,800.                                                                                                                                                                                                                                                                    |
| "                 | Saunakī, .....                                        | 10,000                                     | Gopath 6,000                | On Brahman, Vid-yāranya's.         | 20,000                           |                                                                                                                                                                                                                                                                                                                                                   |
| "                 | Saunakī, .....                                        | 10,000                                     | Gopath 6,000                | On Brahman, Vid-yāranya's.         | ..                               | { N. B. Vid-yāranya is only another name for Mādhanva, at a another period of his life.                                                                                                                                                                                                                                                           |
| "                 | Saunakī, .....                                        | 10,000                                     | Gopath 6,000                | On Brahman, Vid-yāranya's.         | ..                               |                                                                                                                                                                                                                                                                                                                                                   |











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